

BioSpectrum

the business of Bio & Health Sciences

Volume 15 ■ Issue 12 ■ December 2017

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WOMEN ACHIEVERS
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Beckmans flow cytometry

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3. GC - Agilent



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2. Nano DSC (Differential Scanning Calorimetry)



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2. RT-PCR
3. BSL-2 Labs

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1. Cryotome
2. Microtome
3. Vibrotome
4. Autostainer



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- ii. Implementing partner for biotech projects - Elevate100(11 Projects)
- iii. Many high impact Start-Ups being incubated

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Industry Research
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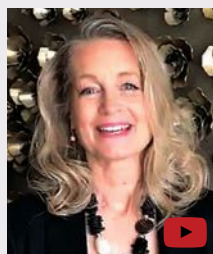
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G.S. Krishnan, Regional President, Novozymes South Asia, gives information about the career opportunities available for biotechnology students at Novozymes



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Mr. Gaurav Gupta, Principal Secretary, IT, BT, Science & Technology, Govt. of Karnataka gives out the highlights of the upcoming Bangalore India Nano 2017 event



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Ms. Terri Bresenham, President & CEO, Sustainable Healthcare Solutions, GE Healthcare talks about the benefits of the new iBreastExam device



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Dr. Krishna M. Ella, Chairman & MD, Bharat Biotech, shares his experience at the Bengaluru Tech Summit 2017



The 'Trump' card

There is a blatant contradiction. On one hand, US President Donald Trump recently expressed concern over the prices of prescription drugs going out of control, describing the trend as the “drug companies getting away with murder.” On the other hand, just prior to that his administration wanted freedom for US medical devices companies to take the prices out of control in India.

Pricing of drugs and medical devices is always a matter of concern as it is connected with human sufferings and loss of life. On the other side are the profits of the pharma and device manufacturing companies, which spend a lot of funding as well as time on research & innovation, trials, approvals before bringing the product to the market.

But who is to be blamed for the high drug prices in US? According to the Harvard Medical School research, the “most important factor” that drives prices higher than anywhere else in the world is the existence of government protected “monopoly” rights for drug producers, preventing generics from coming to market at reduced price.

So, the action is required from Trump only when he says that the drug prices have “gone through the roof.” Trump’s statement has a support from a recent study done only about the cancer drug prices.

The joint study by Ben-Gurion University of the Negev (BGU), Rabin Medical Center and Tel Aviv University in Israel, as well as Emory University in Atlanta published in the Journal of Clinical Oncology is the “first one that systematically investigates oncology drug price changes with time and the correlation to the market structure.” It studies the monthly trajectories of 24 US FDA approved cancer drugs calculated with the cumulative and annual drug cost changes for each drug. It was found that after a follow up period of 12 years, the mean cumulative cost increase was 37%. Prices of one type of Leukemia drugs increased by 85% and that of another type by 95%. In case of breast cancer drug the prices jumped by 78%. Only the metastatic colorectal cancer drug prices have decreased with time.

The prices have increased regardless of

competition or supplemental indications. The study has felt that there is a need of new regulations to prevent additional increase in drug costs after launch.

This is what exactly Indian government is doing in case of coronary stents and knee implants by slashing the prices up to 75% to make them affordable in order to provide relief to needy patients and stop illegal profiteering, which in some cases was exceeding 400%. The government has clearly announced its policy of providing affordable healthcare taking precedence over the interests of companies.

But, it is an irony that the same Trump administration that is worried over the drug prices in US has asked Indian government not to extend its price control on more medical devices. With an obvious intention to protect the interests of US companies, the US administration has also asked the Indian government to permit the device companies to withdraw their products if they are unwilling to sell them at the government controlled price. India controlling the device prices is a principal concern for US, so much so that earlier in May even a group of US Congressmen had urged India to reconsider its decision of price control.

All India Drug Action Network (AIDAN), an NGO has urged the Indian government to reject the US demand and in fact extend the price control to 20 more devices as access to affordable healthcare is non-negotiable. Indian government needs to take a serious view of the US dictate and strongly oppose the suggestion from the US administration. It can use the Trump’s statement about prices of drugs in US itself as the “Trump” card opposing US’ moves to try to de-control the prices of medical devices in India in the interest of the manufacturing companies. As US president wants to provide relief to the country’s citizens, so does the Indian government to its citizens.

Milind Kokje

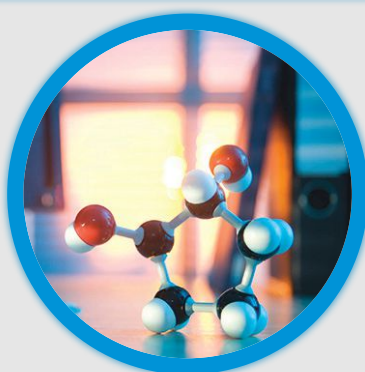
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Indo-China deal

Post Gland-Fosun deal, I feel that India might lose its edge on a particular pharma segment where it has significant presence internationally. A good article!

-Rishav Mehta, Nagpur

Essential IP element

Intellectual Property is a very essential element for any organization, whether startup or MSME, to sustain over long periods of time.

-Rajit Arora, Mumbai

Med Tech potential

I totally agree that the medical device industry will be able to boost innovations in the field of medical technology. Keep posting more such articles.

-Gayatri Agarwal, New Delhi

Diagnostic Industry

I believe that there is a huge potential and scope for the indigenous players in the diagnostic industry, especially to make the market more affordable for the common man.

-Rani Singh, Rajasthan

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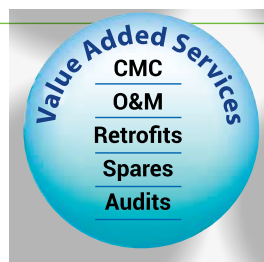
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Karnataka to work on health technologies

The government of Karnataka recently signed a Memorandum of Understanding (MoU) for three years with the Union health ministry's Department of Health Research. The objective is to undertake Health Technology Assessment (HTA). The Department of Health Research has set up India's first HTA agency, Medical Technology Assessment Board (MTAB), to assess cost-effectiveness of health interventions.

MTAB aims to reduce the cost in patient care, expenditure on medical equipment, overall cost of medical treatment, reduction in out-of-pocket expenditure of patients and streamline the medical reimbursement procedures.

As part of the agreement, it will assess medical devices, drugs, medical and surgical procedures. The assessment will include evaluation of medical effectiveness, cost effectiveness, efficacy, safety, psychological, social ethical organisational and economic aspects of it. The results of these evidence-based studies will be used for policy-making.

Every state government, agency, health programme, for example, the Non-Communicable Disease Programme and the National Vector-Borne Disease Control Programme can use HTA to understand how best their resources can be used.



Assam to get a cancer care grid soon

Assam Health Minister Dr Himanta Biswa Sharma has revealed that a South Asian cancer research centre and a three-level cancer care grid is likely to come up in Assam soon. This development was followed by the Minister's meeting with Ratan Tata and members of Tata Trusts at Mumbai recently.



Assam Government and Tata Trusts are working on setting up a unique three level cancer care grid that is first of its kind. The grid is being established at state, capital and district levels. It is likely to have an investment of Rs 1400 crore and would be accordingly shared between Tata Trusts and the state.

The first level or L1 of the cancer care grid will have advanced, tertiary care facilities. The second level (L2) will be equipped with chemo, radiation and surgical oncology. And the third level or L3 will have day care, chemotherapy and radiation facilities. On the same line, a South Asian Cancer Research Centre will be established for undertaking research on identifying reasons and developing protocols for effective treatment with a focus on South Asia.

Kerela collaborates with UK for healthcare

The Kerala government has collaborated with a UK university for making changes in its healthcare model. The main objective is to address issues surrounding capacity development for primary care, training and research. The model will be based on UK's state-owned National Health Service (NHS), the largest and the oldest single-payer healthcare system in the world that provide healthcare benefits to every citizen.

Recently, a delegation led by Kerala's Health Minister K K Shylaja Kumari concluded a two-day visit to the University of Warwick in central England to explore how the general practitioner (GP) system has adapted to pressures caused by population changes.

The delegation also visited the University Hospital of Coventry and Warwickshire (UHCW) NHS and local general practices in Coventry city centre, along with local clinicians and members of the academic unit for primary care at Warwick Medical School.

Kerala has the highest literacy rate and the highest life expectancy in India, and is experiencing a rapidly aging population and an increase in non-communicable diseases such as diabetes.

In order to address these issues, the Kerala government is planning to establish training programmes to teach primary healthcare workers such as GPs and nurses.

Eris Lifesciences to acquire Strides's generic biz

Eris Lifesciences Ltd has agreed to acquire Strides Shasun Ltd's branded generics business in India for Rs 500 crore (\$77 million) in cash. Strides' India branded generics business comprises a portfolio of more than 130 brands in the domains of neurology, psychiatry and nutraceuticals. This business had sales of Rs 181 crore in 2016-17.

As part of the agreement, Eris will acquire the marketing and distribution rights for the portfolio of products in India while Strides will retain the global rights for these products.

This acquisition is Eris's fourth and the largest in the past 18 months, and will help it break into the league of top 25 companies in the Indian pharmaceutical sector with a market share of more than 1 per cent.

Eris will also be among the top 10 companies in the Central Nervous System (CNS) segment. The company is already among the top 20 companies in the cardiology segment and among the top 10 in the diabetology segment. The company has focused on the two chronic segments since inception in 2007. The acquisition cements Eris's position in the top three chronic segments.



PE giants eyeing stake at Mankind worth crores



Big private equity firms and sovereign wealth funds are exploring a purchase deal share worth at least Rs 5,000-crore (\$750-million) in India's fifth largest drug maker Mankind Pharma. The privately-held, two-decade-old company has started a process to divest a 25 per cent stake, valuing itself at over Rs 19,000 crore (more than \$3 billion).

Mankind Pharma has appointed investment bank Moelis & Co to find suitors for the stake on offer. Global investors such as GIC of Singapore,

Warburg Pincus, KKR & Co, Advent and a Canadian pension fund are among those who have looked at the transaction, which is still in its early days. The company has a heavy focus on selling affordable drugs in the semi-urban and rural markets.

Mankind has over 14,000 employees and a portfolio spread across prescribed drugs, over-the-counter and FMCG products. The company has more than 1,000 prescription products in 14 therapies and 21 dosage forms. Mankind's domestic sales are valued at Rs 4,248 crore, with a market share of 3.7 per cent, making it the fifth-largest company in organised retail.

The owner family controls 89 per cent stake in Mankind with Capital International holding the rest 11 per cent. The New Delhi-based company has a turnover approaching Rs 5,000 crore and about Rs 950-crore operating profit.

Morepen signs agreement with Vesale Pharma

Indian pharmaceutical firm Morepen Laboratories has signed an exclusive deal for strengthening its presence in India's growing probiotics market. The company has inked an agreement to market and distribute Belgian probiotics player Vesale Pharma International's major brands in the gastroenterology segment. Morepen currently does not have a presence in the probiotic market for gastroenterology.

Gastroenterology is a branch of medicine that deals with disorders of the stomach and intestines. Morepen hopes to use its latest agreement to capture 5-10 per cent of this segment by 2022. The gastroenterology segment of India's probiotic market is currently valued at Rs 1,000 crore and is expected to grow to Rs 8,000 crore in the next five years. Probiotic products contributed around Rs 1.5 crore of the Rs 120 crore Morepen drew in revenues for its finished formulations in 2016-17.

As per the agreement, Morepen will launch four of Vesale's major probiotic brands in India in the next two months- Bacilac Infantis, Bacilac ORS, Bacilac Forte and Cibalax.

NephroPlus to expand dialysis services

NephroPlus is planning to open 55 centres of dialysis service across India by the end of next year. The expansion step in the Indian market could entail an investment of around Rs 55 crore. The company has about 126 dialysis centres in different cities in India. NephroPlus

intends to focus on different tiers of cities while expanding.

The aim is to focus on tier II, III and tier IV cities such as non-metros, state capitals and large towns for expansion. NephroPlus Founder and CEO Vikram Vuppala stated that the company would be investing around Rs 1 crore per centre, which would have around 10-12 dialysis machines.

Already Rs 100 crore have been raised from the World Bank and BS capital. NephroPlus has also partnered with HDFC bank in order to ensure sufficient funding for the next one and a half year. The company is also planning to have presence in five new countries in the next five years.



Abbott pioneers unique dosing device in India

Abbott has pioneered in India LiDoCon, short for Liquid Dosing Concept, a first of its kind device for liquid medicines that provides accurate, hygienic and convenient dosing. This novel technology currently is being used for a cough syrup, but in time, will be extended to different types of liquid formulations. LiDoCon was conceptualized at Abbott's Innovation and Development Center in Mumbai.

The special LiDoCon cap is locked on to the neck of the bottle. By a simple four-step process of "Fill, Invert, Lock and Revert," a specific amount of liquid is dispensed, ensuring that there is no backflow. A premeasured quantity is dispensed from the bottle, which means that no washing is required. This greatly reduces risk of contamination and reduces overall preparation time.

The insights behind LiDoCon originally came from an Abbott employee in Mumbai, whose son suffers from asthma. His family experienced the herculean task of constantly cleaning and keeping track

of the various dispensing caps from his son's multiple syrups. That is when he approached Abbott's innovation team for a solution. LiDoCon was born of a practical need felt by a parent so that



monitoring of dosage and hygiene could be made easy. Physicians across the country have shown a positive response to this new dosing technique.

LiDoCon ensures that only a measured amount is dispensed, and hence prevents overdosing and accidental ingestion of a large amount of liquid.

Alembic Pharma acquires Orit Laboratories

Gujarat-based drug maker Alembic Pharmaceuticals Ltd has bought US-based generic drug developer Orit Laboratories LLC from Okner Realty LLC in its first cross-border acquisition. The acquisition increases Alembic's US product portfolio with seven approved and four pending Abbreviated New Drug Applications (ANDA). Alembic will now have 69 ANDA approvals from the US Food and Drug Administration.

Orit, based in New Jersey, was founded in 2005 by Satish Patel. It has an 8,600 sq ft R&D and pilot manufacturing facility. Patel will join Alembic Group along with eight other scientists. Orit will also bring complementary skills sets in soft gelatin-based oral solid and liquid products. The acquisition reflects the Alembic's ambition to grow its US generics business in a measured way. It will also expand the company's basket of product offerings to the customers, showing commitment to be a long-term player in the US generic industry, and will help the company establish a powerful R&D footprint in the US.

StanPlus raises seed funding

Healthcare startup StanPlus, based in Hyderabad, has raised \$1.1 million for a minority stake led by Kalaari Capital's Seed Fund, Kstart. CM Diamant, a chain of medical centres and hospital in Canada and Africa, and INSEAD Angels (Asia) also participated in the round.

StanPlus is involved in providing medical transportation. The amount invested will be used to increase StanPlus's Advance-Life Support fleet and expand across geographies, innovate with cutting-edge technologies and to cover all medical transportation categories in near future. The funding will also be utilised to augment the technology front.

The startup was founded in 2016 by three INSEAD MBA graduates – Prabhdeep Singh, Antoine Poirson and Jose Leon. StanPlus is currently spread across eight cities including Hyderabad, towns of Andhra Pradesh, Telangana. StanPlus aims to be India's largest ambulance network dedicated to bringing quality and



efficient ambulances services for emergency, non-emergency and afterlife support.

StanPlus receives an average of more than 60 calls per day. With a fleet of more than 300 ambulances, around 60 ambulance operators on board, 15 hospitals accounting for more than 2000 beds that exclusively use StanPlus' ambulance network, the company gives customers a single number access to every hospital's ambulance.

IIT-D startup develops a nasofilter device

Nanoclean Global, an Indian Institute of Technology, Delhi (IIT-D) startup has developed a filter device for covering the nostrils. It is priced at Rs 10 and is not very conspicuous as the edges that stick to the bottom of the nose are rather transparent. One filter can be used for around eight hours. The first prototype of Nasofilter was developed in 2016. The team formed Nanoclean Global to commercialise the device. The team used nanotechnology to build the filters that can stick on the user's nasal orifice while restricting the entry of particulate matter, including PM2.5 particles and pollen allergens.

Nasofilter contains a highly porous substrate that does surface filtration and autocleans itself as one exhales. The device recently won the Startups National Award 2017 by the Technology Development Board for creating promising new technology protect against air minimise the risk of respiratory diseases. The startup team - a mix of civil and mechanical engineering graduates and textile engineering professors - is now aiming for a pan-India launch of the product on December 2, National Pollution Control Day.



DocTalk raises \$5M in first funding round

DocTalk, a health-care startup app which allows doctors and patients to stay in touch and skip in-person follow-on visits, has raised \$5 million in its first institutional round of funding led by Silicon Valley venture fund Khosla Ventures and Matrix Partners India.

The Y Combinator-backed company also saw participation from other Silicon Valley investors like Liquid2 Ventures, Altair Capital, YS partner Paul Buchheit who created Gmail, Arihant Patni, Apoorva Patni, Vy Capital, among others. The Mumbai-based startup plans to use the fresh capital to expand its team and on board hospital chains on its platform.

Founded by Goenka, Krishna Chaitanya Aluru and Vamsee Chamarkura little over a year ago, DocTalk claims to have about 500 doctors using its services serving about 30,000 patients so far. The usage of DocTalk has increased revenues for doctors.

Currently, DocTalk has operations in Delhi, Mumbai and Hyderabad but the company is planning to hire across departments such as sales, operations and technology as it expands into new cities.

COVER STORY

Women Achievers: MAKING A DIFFERENCE

The Indian pharmaceuticals market is the third largest in terms of volume and thirteenth largest in terms of value, and it accounts for 20 per cent in the volume terms and 1.4 per cent in value terms of the Global Pharmaceutical Industry as per a report by Equity Master.

Indian pharmaceutical industry which offers affordable medicines, however, fails miserably when it comes to ensuring gender diversity by providing equal opportunities to women. But women are keen on taking up opportunities in healthcare, clinical services, biotechnology and research and development and contract research and services. It is still a long way to go.

According to a study from Mercer India, life sciences industry that includes pharma, biotechnology, medical technology etc. is way behind in terms of female workforce representation that stands at 11 per cent for women workforce on an overall basis. In life sciences industry, there is only 5 per cent of female representation in sales and marketing function. The female representation in general industry is 15 per cent. Diversity though looks somewhat better in other functions in life sciences companies with women representation being 12 per cent in manufacturing, 17 per cent in R&D and 21 per cent in corporate functions.

One of the key reasons for life sciences industry lagging behind in acquiring women talent is the significantly large sales force which is not perceived as a career of choice by women and hence the talent pool is very limited at the entry level. Typically the sales and marketing

function comprises 60-80 per cent of workforce in pharma industry.

Mercer in its report says that pharma sector is still at the entry-level of building ecosystems for gender-inclusion and women leadership. However, there are some recent positive trends like some companies putting in mandated ratio of female candidates while sourcing, providing higher referral amount to employees referring female candidates as part of the overall employee referral schemes in the company and a few more.

Mercer advocates that, in order to be future ready from diversity perspective, pharma companies need to look at designing a compelling employee value proposition for women, at the same time having alternate employment model for women like job sharing, part-time job and alternate work opportunities.

In an attempt to enhance the participation of women scientists in biotechnology research, the Department of Biotechnology (DBT) launched a Biotechnology Career

Advancement and Re-orientation Programme (Bio-CARe) for women Scientists. The scheme is open for all areas of Life Science / biology (including agriculture, veterinary science and medicine).

Besides, Department of Science and Technology (DST) too has "Women Scientists Scheme (WOS) aimed at providing opportunities to women scientists and technologists between the age group of 27-57 years who had a break in their career but desired to return to mainstream. Through this endeavour, concerted efforts have been made to give women a strong foothold into the scientific profession, help them re-enter into the mainstream and provide a launch pad for further forays into the field of science and technology.

In addition to DBT and DST, many more government agencies from both central and state level have schemes for women to make a difference to the human beings and to the society at large. Today, women are leading a congruent life which is helping them make more purposeful choices.

BioSpectrum appreciates the achievements of the women leaders who have stood against odds and have made their own 'space-on-stage' in this field of life sciences, pharma and biotechnology and healthcare and allied areas; women who have been successful at their work, women who have proved their mettle wading through troubled waters, women who have reached to senior or top positions. Women are doing a commendable job in aligning their life with their foundational belief, values and principles.



Promoting affordable healthcare

Terri Bresenham is passionate about healthcare and global health issues and has devoted more than 25 years to the field. As President & CEO of Sustainable Healthcare Solutions, GE Healthcare, Terri's role includes regional leadership of the company's operations in India and South Asia, Africa and Southeast Asia, focusing on addressing customer needs across these regions and working with governments, clinicians, private operators and NGOs to support their complete healthcare system development; from start-up phase through to established healthcare infrastructure build out. In this role, she also leads GE Healthcare's investments in affordable technologies, including the major R&D centers in China and India.

"India has the world's most affordable healthcare system across the globe. Countries around the world are struggling with the idea of bringing in affordable healthcare in the country. There are many opportunities in India, especially when you look at the market. The challenge in fact is to focus on solving specific problems and needs" Terri pointed out.

Terri started her GE career in 1990 as an Edison Engineer. She progressed through engineering, product management and global operation roles in PET, MR and CT businesses. She subsequently led U.S. Sales & Marketing for Women's Health, and was promoted to lead the Bone Mineral Densitometry business in 2000, where she successfully integrated the Lunar, Inc. acquisition while growing revenues more than 15 per cent each year and significantly improving overall profitability.

While she was serving as the Vice President, Global Diagnostic Ultrasound

in 2007, the \$600 MM global Diagnostic Ultrasound & IT (DU-IT) business has delivered double-digit growth, and expanded margins at twice the rate annually.

Prior to her current role, Terri served as President & CEO of GE Healthcare India, leading GE's vision of "healthymagination" in India – an approach that aims to provide better healthcare for more people through solutions that bring costs down, increase access and improve the quality of healthcare.

Terri earned her master's degree in Biomedical Engineering from the University of Texas, and her bachelor's in Medical Technology from the University of Tennessee. She is a board member of a number of healthcare organizations and is active in community-based health projects.

"I passionately believe that women play an important role in the healthcare system of any nation. To improve and sustain the health of a nation, the world must tap into and unleash the power of women", shared Terri.

Terri and GE Healthcare are part of the Women in Global Health leadership platform which is a movement that seeks equal gender participation in global health leadership. She was instrumental in launching the Heroines of Health award in 2017. The award showcased the work of 13 women from 11 countries including Kenya, Cambodia, India and Sweden. The women worked with various aspects of healthcare including sexual and reproductive health, and improvement of maternal and neonatal health. Their achievements were highlighted at the WHO's World Health Assembly in Geneva in May 2017.



**TERRI
BRESENHAM**

President & CEO,
Sustainable Healthcare Solutions,
GE Healthcare

WITH MORE THAN
25 YEARS OF
EXPERIENCE IN
HEALTHCARE,
TERRI BRESENHAM
HAS MADE
SEVERAL
CONTRIBUTIONS
TOWARDS
ADDRESSING
GLOBAL HEALTH
ISSUES



DR RENU SWARUP

MD, Biotechnology Industry Research Assistance Council (BIRAC) and Sr. Advisor, Department of Biotechnology

HAVING PHD IN GENETICS AND PLANT BREEDING, AND A POST-DOCTORAL FELLOWSHIP, DR RENU SWARUP IS PLAYING AN ACTIVE ROLE IN STRATEGY PLANNING FOR BIOTECHNOLOGY INDUSTRY

Active in strategy planning for biotechnology industry

Having PhD in Genetics and Plant Breeding, and Post-Doctoral fellowship at The John Innes Centre, Norwich UK, under Commonwealth Scholarship, Dr Renu Swarup who was having two options – researcher and science manager – took up the assignment of a Science Manager in the Department of Biotechnology, Ministry of Science and Technology in 1989. Since then she was actively engaged in formulation of the Biotechnology Vision in 2001 and National Biotechnology Development Strategy in 2007 as the Member Secretary of the Expert Committee. She was also a member of the Task Force on Women in Science constituted by the Scientific Advisory Committee to the Prime Minister.

Talking about her role in developing strategy plans for the niche biotechnology industry, Dr Renu says “I was very fortunate that I got different opportunities be it from being associated with first Vision document on biotechnology brought in the year 2001, National Biotechnology Development Strategy in 2007, Second strategy in the year 2015; creating new models of the programmes to be taken up be it first intelligency programme of Department of Space. We did a characterisation of biodiversity project as the first public-private-partnership programme (PPP). We did for microbial prospecting and then shaping policies in the government for the first time for supporting and funding PPP research and then moved on eventually to BIRAC. I think the large canvas that was before me has really given me enormous opportunities. Over 29 years, I have looked at different aspects of policy planning.”

At DBT, she heads the National Bioresource Development Board and

is involved in developing, funding and monitoring programmes in the area of Energy Biosciences, Bioresource Development and Utilization and Plant Biotechnology- Bioprospecting, Tissue Culture and other Biomass associated programmes. She has also been closely involved in programmes and activities related to Women and Science. She was responsible for getting implemented the DBT Scheme on Biotechnology Career Advancement for Women Scientists – BioCARE.

Commenting on challenges she says, “Challenges are working within the system. Challenges are trying to see how to keep pace with the fast moving changes in the field of biotechnology as this domain is moving really fast and if we have to plan the policy for biotechnology, we have to keep pace with that change. What you plan today will not really stay in next five years. Challenges have been how we keep up not only nationally but competitively in the global scenario. More than anything else challenge is how do you work through this whole policy in inclusive manner and get everyone on board. And biotechnology offers that challenge much more than any other area because it cuts the cross-sectors.”

“There will be ups and down in your career and there will be successes and failures and there will be set backs but all this should not detour you. If you have a broad vision of what you wanting to achieve and if you know what your goal is, focus on the goal and with hard-work, determination and passion you will surely reach somewhere. Even if there are slippages and you fall back, you should always get up and move on with faster pace ahead because that failure will teach you where you went wrong,” she concluded.



Department of Biotechnology
Ministry of Science & Technology
Government of India



Biotechnology Industry Research Assistance Council
(A Government of India Enterprise)

National Biopharma Mission

Industry – Academia Collaborative Mission for Accelerating Early Development For Biopharmaceuticals Innovate in India (I3)

Inviting Proposals in the areas of:

- Vaccines ■ Biotherapeutics ■ Medical Devices & Diagnostics

An Industry - Academia Collaborative Mission of Department of Biotechnology, Ministry of Science & Technology, Government of India for Accelerating Early Development For Biopharmaceuticals; to be implemented by Biotechnology Industry Research Assistance Council (BIRAC) – a Public Sector Undertaking of DBT.

The National Biopharma Mission is approved for implementation at a total cost of US\$ 250 million, which is 50% co-funded with World Bank Loan Assistance.

This Request for Proposals (RFPs) is to seek individual applications on either of the following :

Focus of the Call

1. Vaccines	2. Biotherapeutics	3. Medical Devices & Diagnostics
<p>Support for accelerating development of:</p> <ul style="list-style-type: none"> Novel vaccine candidates for HPV, Dengue and Pneumococcal Novel and complex vaccine candidates for other diseases of high burden and priority in India 	<ul style="list-style-type: none"> Support for development of biosimilars (therapeutic proteins & monoclonal antibodies) for cancer, rheumatoid arthritis & diabetes Support for establishment of: <ul style="list-style-type: none"> Process Development Laboratory CMC Facility GLP Validation Facility Cell Line Repository 	<p>Support for accelerating development of</p> <ul style="list-style-type: none"> Critical medical device technologies for relevant product segments Core technologies as platform technologies for priority products

How to apply

Detailed Mission Document and RFPs can be seen at
www.birac.nic.in/nationalbiopharmamission.php

Proposals to be submitted online. Please log on to www.birac.nic.in.

LAST DATE FOR SUBMISSION : 15th DECEMBER, 2017

For queries please contact: Head NBM, Email: technical.birac@gov.in

COVER STORY



**SUNEELA
THATTE**

VP Global Operations,
IQVIA, India

SUNEELA THATTE,
LEADING THE ISCR
AS PRESIDENT
FOR TWO TERMS
(2013-15 AND
2015-17), PLAYED
A KEY ROLE IN
BRINGING NEW
REFORMS AND
IN POSITIONING
INDIA AS A
DESTINATION
FOR CLINICAL
RESEARCH

Passion drives commitment & excellence

At times, when the Indian clinical research industry was passing through turbulent and bumpy weather Ms Suneela Thatte, who was leading the Indian Society for Clinical Research (ISCR) as president, played a key role in bringing new reforms and in positioning India as a destination for clinical research. Besides, during her leadership, the society played a catalytic role in building awareness of clinical research as a specialty in India. She was at the helm of the ISCR for two terms - 2013-15 and 2015-17. Now the CRO industry is seeing bright future with government making changes and bringing in amendments.

An industry leader with rich experience in clinical research, operations and business management, Suneela currently works as Vice President, Global Operations, for IQVIA global growth, regulatory strategy and is responsible for engagements with industry bodies and associations.

She is also an active member of the Clinical Research / Pharma committees of several industry associations such as Confederation of Indian Industries (CII), Federation of Indian Chambers of Commerce (FICCI), and Organization of Pharmaceutical Producers of India (OPPI). As a recognition of Suneela's contribution to clinical research sector in India, she has been honoured by Healthcare Businesswomen's Association, USA, as "Healthcare Luminary" in 2017.

Suneela, who holds a Master of Pharmaceutical Sciences from Mumbai University and a Master of Business Administration from TASMACH, Pune, began her career as Assistant Manager, Medical Information Service at Unichem Laboratories. Later she moved to Rhone Poulenc as Clinical Research Associate

in the Medical Services Division before she joined IQVIA in 1998. She has also published papers in leading medical journals.

Recalling her early days of her career, Suneela observed "When I entered the industry as a fresh post graduate, I had very little idea about what to expect. My focus at the time was to develop as a good professional and excel at whatever I chose to do. With years in the industry now behind me, I realize that is also important that whatever you do professionally needs to resonate with your inner motivation so that your work brings you not just success, but also satisfaction. I was fortunate to have mentors along the path who helped me refine this further and, today, while success matters to me, so does professional excellence and satisfaction.

Speaking about the challenges she pointed that healthcare and pharma are industries which attract many talented women but the leadership in these domains is largely male dominated. "Many a times, I have seen that the general perceptions about women in professional roles keep many talented women away from coveted jobs despite a good fit between a role and their competencies. There is a general belief that women will not stand up to the pressures of leadership as they also have a home to manage, that they may not be as assertive as men and that they may not be able to take tough decisions."

Sharing her thoughts on success mantra Suneela said "It is important that one is passionate about one's profession, whatever that may be. Passion drives commitment and excellence and, if these attributes are combined with an organized and focused approach, success is not far away."

Exploring growth opportunities

As the President of PerkinElmer India, Jayashree Thacker carries the responsibility for revenue, profitability and growth across 4 business units - Environmental Health, Life Sciences Solutions, Diagnostics, and Informatics.

She believes in being transparent and stays committed to her work, and tries to evoke similar notions in people who are delivering for the organization.

Recently, PerkinElmer India has opened a Centre of Excellence (CoE) at the Indian Institute of Science Education and Research (IISER) Pune, to help educate the region's current and future scientists on high-throughput analyses in life sciences.

"This collaboration is another step towards supporting the Skill India campaign, which helps researchers and students develop advanced competencies in life sciences research. Our collaboration with IISER supports the expansion of PerkinElmer and our relationships with leading research organizations in India, further positioning us to deliver innovative solutions for our customers", she shared.

Jayashree is a graduate in Pharma from University Department of Chemical Technology (UDCT), Mumbai, and a post graduate in marketing from IIM, Ahmedabad. She has gained rich expertise by leading the Healthcare Industry vertical at IBM India Global Delivery, and the Lifesciences & Healthcare Business Consulting practice at IBM for the India market.

When she joined PerkinElmer three years back, her mandate was to create an organization that would be ready to exploit the growth opportunities in the market. "The initial couple of years really went through in getting things

accomplished. It all depended on getting the right competencies in place", she pointed out.

With so many things in hand, Jayashree's day typically begins at 6 am. After finishing her morning chores at home, her day goes by in the office till evening. "It is extremely important to have a balanced lifestyle. One should not get distracted while at work. At the same time there are certain things that require your undivided attention in your personal life", said Jayashree.

For her, the biggest achievement has been in turning around the organization and making it ready for growth. "Some of the businesses which were not doing well have turned around and started giving positive growth. Most of the challenges now are external. Initially those were internal but we have straightened out a lot of things", she said.

She recently accepted the Leadership Award for Contribution to Healthcare at the Healthcare Summit held in Bengaluru. "We are very happy to receive this recognition. It motivates us to continue to innovate for our customers throughout India, with advanced solutions that help protect the environment, the safety of our food, and the health of mothers, newborn babies and their families", she mentioned.

An advice for young women entrepreneurs- "There is a phase when women have to contribute a lot to family front and then all the balancing becomes really difficult. You need to have a very good support system. As Indra Nooyi says, the biological and career clock are conflicting when it comes to women. I think that is where we as an organization should be able to support".



JAYASHREE THACKER

President, PerkinElmer India

GAINING RICH EXPERTISE BY LEADING THE LIFESCIENCES & HEALTHCARE BUSINESS CONSULTING PRACTICE JAYASHREE THACKER CREATED AN ORGANIZATION THAT WOULD BE READY TO EXPLOIT THE GROWTH OPPORTUNITIES IN THE MARKET



BINDHYA CARIAPPA

Chief Scientific Officer &
Executive Vice President Turkey,
Middle East, Africa and Asia
Pacific, Clintec International

WITH HER 20
YEARS OF
EXPERIENCE,
BINDHYA
CARIAPPA IS
WORKING ON
PUTTING INDIA
ON THE GLOBAL
CLINICAL TRIAL
MAP

Enhancing clinical drug developments

With 22 years of experience in the Clinical Research industry and an expert in vaccine development, Bindhya Cariappa has seen her share of struggles and challenges in her career. After completing a Master's degree in Pharmacy, she took up her first job as a clinical research associate (CRA) at Smith Kline Beecham.

"Twenty years ago, this was a role that was very new to India but the description promised an interesting career in research. I was selected as the first CRA for SmithKline Beecham's operations in India. Working with global clinical development and regulatory teams in UK & Europe helped rapidly assimilate knowledge of challenges and best practices across global clinical research programs (before the ICH GCP guidelines were rolled out) and initiate GCP compliant trials in India. It has been a very interesting journey ever since", shared Bindhya.

Today, Bindhya brings extensive clinical drug development experience having managed over 100 clinical programs in more than 30 countries, from North America to Australia. Her extensive experience includes management of clinical operations, regulatory affairs, quality assurance, medical writing, and training across these geographies. She has also been involved in training and development, working with 2 academic institutions in India and the UK to develop and deliver the curriculum for Masters programmes.

Bindhya joined Clintec in 2002 and gradually developed and implemented the company's clinical services in India. Bindhya has supported the

development and expansion of Clintec's operations in Africa, Middle East and Asia Pacific.

"The change in clinical trial regulations significantly impacted the clinical research industry as the majority of the workforce within these organisations was supporting onsite clinical operations activities. Observing the growing trend, it was imminent to implement plans to de-risk the business and we cross-trained resources to work on other functional verticals, upskilled resources to take on project lead and project management roles that were agnostic to location of operation. This helped us successfully maintain the team, double our turnover and we were one of the only organisations in India that avoided redundancies", Bindhya pointed out.

With an estimated annual revenue of \$100 million, Clintec is at the top of its growth metrics when compared to competitors. During 2015-2020, while the CRO market in North America is expected to grow at 10.4 per cent CAGR, the Asia Pacific CRO market is forecasted to grow at a CAGR of 19.9 per cent. "The current challenges are to put India on the global clinical trial map, as well as manage the recruitment challenges of oncology and rare disease programs globally, that constitute a majority of the programs we manage. Expansion of clinical programs to India, is at the heart of all our client, industry and regulatory interactions. I also interact with various groups including under students to raise awareness and educate participants on the need for clinical trials and the importance to understand patient's rights", said Bindhya.

Integrating policy and public affairs in pharma

Being one among the very few women who make it to senior roles in industry, Kanchana TK, Director General, Organisation of Pharmaceutical Producers of India (OPPI) has not hesitated to make bold career moves. Her professional experience of over two decades at the leading edge of a spectrum of businesses related to healthcare consulting and delivery, healthcare access and pharmaceuticals stands her in good stead with her many interlocutors. Her experience spans public affairs, policy, and business verticals in India, Africa and Middle East. She has worked across geographies, managing public affairs across borders in Middle East and Africa. Some of the campaigns designed under her leadership have had impactful outcomes.

"I started with hotels and moved to Insurance and more specifically to health Insurance. I introduced corporate health and wellness when all clients wanted was a lower employee benefit payout. I then moved to Pharma in Policy and Public Affairs at a time when the pharma policy ecosystem was rapidly changing. I think taking risks and moving industries was bold and foolish at the same time but I don't believe in linear career growth. To the contrary I think my multiple roles have helped my growth", shared Kanchana.

Having worked in two highly regulated sectors – insurance and pharmaceuticals, she understands stakeholder expectations and the evolving policy ecosystem in the country. Her experience of consulting on new product offerings for healthcare insurance, a deep understanding of the patent and pricing issues in pharma, designing patient assistance programs

and access initiatives enable her to better understand the healthcare needs in India.

An admirer of Thai cuisine, Kanchana spearheads OPPI's engagement on emerging issues like anti-microbial resistance (AMR) and policy advocacy on government action on non-communicable diseases, four of which – cardiovascular diseases (CVD), cancer, diabetes and chronic obstructive pulmonary disease (COPD), that account for more than half the mortality rates in India.

She leads OPPI's engagement with the government of India on a three-part agenda critical to an industry that produces medicines and therapies that are essential to the health of the Indian people: (a) intellectual property rights or IPR, that governs the system of protecting patents owned by member company; (b) access to healthcare, that allows member companies to bring the latest medicines for life-threatening diseases, and (c) ethics in pharmaceutical marketing, a code which protects.

Her work has been recognized with a number of awards: Women Worth Watching 2017; the 'Top 50 impactful women in Healthcare' (global listing) by World Health & Wellness Congress, 'Bloomberg-UTV Women in Leadership Award', 'Women at Work Leadership Award' by Bloomberg-UTV, 'WILL Choice Awards' by WILL Forum, to name a few.

"The one thing that I want as an achievement at OPPI is to be able to make a positive impact through policies for the Indian patient. The future of healthcare and innovative medicine offers new hope for millions of patients every day", mentioned Kanchana.



KANCHANA TK

Director General, Organisation of Pharmaceutical Producers of India (OPPI)

UNDERSTANDING
STAKEHOLDERS'
EXPECTATION
AND THE
EVOLVING POLICY
ECOSYSTEM,
KANCHANA TK
LEADS OPPI'S
ENGAGEMENT
WITH THE
GOVERNMENT OF
INDIA ON A THREE-
PART AGENDA
CRITICAL TO AN
INDUSTRY



**DR SARAL
THANGAM**

CEO & Managing Director,
Norwich Clinical Services

LEADING IN
SETTING UP A
CRO, DR SARAL
THANGAM
SPEARHEADED
THE COMPANY IN
INCREASING THE
HEADCOUNT BY
10 TIMES WHEN
THE INDUSTRY
WAS PASSING
THROUGH TOUGH
TIMES

Passion towards science and research

North American company Norwich has been serving the pharmaceutical industry for more than 100 years. In 2010, Norwich Pharmaceuticals, an Alvogen subsidiary, announced the formation of Norwich Clinical Services to provide clinical Research capabilities for further expanding the company's third party services.

Dr Saral Thangam then took the lead in setting up the CRO in Bengaluru, with an experienced team of professionals, each having more than 15 years of experience in clinical research and life sciences. Today, Norwich Clinical Services has state-of-the-art facilities, and exceptional expertise to conduct bioavailability and bioequivalence studies, clinical trials, drug metabolism studies, dose proportionality studies, multiple dose studies and pharmacovigilance.

Prior to joining Norwich, Dr Saral Thangam was the managing director of Lotus Labs. In addition, she has headed various operational units, including clinical pharmacology, clinical development, quality assurance and business development at Lotus. She has published and presented many research papers in scientific forums in international conferences.

The company started with around 20 employees, and under the expert guidance of Saral Thangam, the number has now reached close to 200. "We understand the complexities of drug development whether biotech, generic or pharma. Each member of our team has extensive experience in their area of expertise including leadership positions in the pharmaceutical sector and contract research organizations," shared Dr Saral

Thangam.

Dr Saral Thangam is a medical graduate from Christian Medical College, Vellore, and has a post graduate specialization in the field of Internal Medicine. She also holds a PhD in Physiology from St. John's National Academy of Health Sciences in India. This passion towards science and research led her to the position she currently holds in her career of more than 20 years.

Norwich Clinical Services is focused on quality, with multiple successful audits by USFDA, EMA and WHO. Their facilities are certified by Indian DCGI, the Brazilian Agency ANVISA and MOH Turkey. With an annual revenue around Rs 60 crore, Norwich Clinical Services has gained tremendous growth in the field of pharmacovigilance over the years. "Many CROs were facing problems few years back due to regulatory issues. Studies were being withdrawn from India during this phase of uncertainty. But we held on and focused our attention on pharmacovigilance and drug safety, and expanded in this direction".

She is a winner of several awards including prestigious Shakuntala Amirchand Award for significant contribution to biomedical sciences by the Indian Council of Medical Research (ICMR). Currently, she is part of the Executive Council at the Association of Clinical Research Organisation (ACRO).

"Norwich also offers corporate training services in various areas of clinical research for the Pharmaceutical, Clinical Research, Biotechnology and IT sectors. In the coming years, we are planning to work more in the direction of biosimilars," said Dr Saral Thangam.

Staying motivated in all aspects of life

Anu Acharya is the CEO of Mapmygenome India, a Genomics company whose vision is "To touch 100 million lives". In 2013, she introduced the concept of improved healthcare through personal genomics in India. Ever since, she has successfully pioneered the company through growing product lines, expanding affiliate network, and a Pre-Series A round of funding.

Under her able leadership, the company has won several awards and honours: Red Herring Top 100 Asia and Global 2016, eN-ABLE Startup Award 2016, Wall Street Journal Startup Showcase 2016 Finalist, ET Startup Awards 2015 – Women Ahead, Nasscom Emerge 50 – League of 10, Emerging Company of the Year 2015 – Govt. of Karnataka, SMART CEO List of Top 50 Startups, VCCircle Innovative Healthcare Startup 2015, and more.

From 2000 until April 2013, Anu Acharya was the CEO of Ocimum Biosolutions, a global genomics outsourcing partner for discovery, development and diagnostics, a company that began as a pure Bioinformatics company. Since co-founding the company in 2000, she has led the company through three strategic international acquisitions, two capital raises for equity investments and launch of several innovative products, solutions and services through its proprietary platform called RaaS (Research as a Service).

Sharing her success mantra Anu Acharya says "Stay motivated in all aspects of life – work, health and fitness, innovation, and family. When you are your own motivation, problems can turn into opportunities and success has no choice but to follow. In fact, we

found a window of opportunity to start a personal genomics company when dealing with a problem. Start early. We became the pioneers of personal genomics in India because of this. Due diligence before a venture can help avoid many pitfalls. Our biggest strength has been our expertise in genomics technology at Ocimum Biosolutions. This knowledge has helped us in performing due diligence."

She currently serves as a Governing Board member at the NIBMG (National Institute for Biomedical Genomics) and IIIT Hyderabad. She is on the Board of Mentors for IvyCap Ventures and Advisory Board at Flag A Spot, Action for India & KIIT. She is also a member of CII National Committee on Biotechnology.

Anu Acharya had served in the past as a Governing Board member at CSIR (Council for Scientific and Industrial Research), the Vice Chair of the Global Agenda Council on Genetics for the World Economic Forum, on the board of ABLE (Association of Biotech Led Enterprises), and as President of the Hyderabad chapter of the Entrepreneurs' Organization.

Prior to founding Ocimum Biosolutions, Anu Acharya has had rich experience in the Telecom, IT and entrepreneurship arenas. She worked for a start-up in the telecommunications space called Mantiss Information and a consulting firm called SEI Information where she helped create a social networking site for entrepreneurs. Her experience is backed by education at premier institutions such as the Indian Institute of Technology at Kharagpur, India (IIT) and University of Illinois where she has two Postgraduate degrees in Physics and MIS.



ANU ACHARYA
CEO, Mapmygenome India

GAINING
EXPERTISE IN
GENOMICS
TECHNOLOGY
AT OCIMUM
BIOSOLUTIONS,
ANU ACHARYA
FLOATED
MAPMYGENOME
INDIA, WITH VISION
"TO TOUCH 100
MILLION LIVES"



DR PARVATHI UNNINAYAR IYER

Director, Paediatric & Foetal
Cardiology, Fortis Escorts Heart
Institute

KNOWN FOR
HER SPECIALITY
IN PAEDIATRIC
CARDIAC,
CRITICAL CARE
DR PARVATHI
UNNINAYAR
IYER HAS
TRAINED OVER
20 PAEDIATRIC
CARDIAC
INTENSIVISTS,
WHO ARE
MANNING ICU'S
NATIONALLY AND
INTERNATIONALLY

Adding on capabilities to work productively

Dr Parvathi Unninayar Iyer is the director of Paediatric Cardiac Intensive Care at the Fortis Escorts Heart Institute (FEHI). She is known for her speciality in Paediatric cardiac critical care and responsible for paediatric and congenital heart surgery. Prior to that, she worked as Assistant Professor at All India Institute of Medical Sciences.

Dr Iyer was closely involved in setting up the first integrated programme that incorporated an intensivist in India in the year 1995 and started the first dedicated paediatric cardiac ICU in Northern India at Fortis Escorts Institute (FEHI).

Sharing her expectations before joining this career she says, "Initially I thought good medicine was all I had to do but later on I realised that along with good medicine I had to be a good administrator too. With time I also realised one has to do good team building in order to work more efficiently and productively."

She was also the first one to generate internationally comparable outcomes in neonatal and infant cardiac surgery and surgery for complex congenital heart disease.

Talking about the challenges she faced while climbing the ladder of success she says, "I faced a lot of challenges because many men are not predisposed to accept women as professional equals. To maintain a balance was difficult but now I have learnt to be persuasive and function diplomatically and it has helped me overcome lot of challenges. But now it is difficult for me to compare the two as modern men are becoming increasingly supportive of their wives' careers."

"Also, the key challenge is to

sustain the level of patient care that we have achieved and to inspire the team to maintain excellent, consistent performance in spite of turnover."

She graduated from the All India Institute of Medical Sciences and M.D. (Paediatrics) from Postgraduate Institute of Medical Sciences, Chandigarh along with a fellowship in Paediatric and Neonatal Intensive Care from the Royal Children's Hospital, Melbourne and Royal Prince Alfred Hospital, Sydney.

Dr Iyer have trained over 20 paediatric cardiac intensivists who are manning ICU's nationally and internationally and have helped set up many paediatric cardiac ICU's within the country and in other countries like Bangladesh, Indonesia, Malaysia and Nepal by training intensivists and ICU nurses and have set up nursing protocols and have been actively involved in nurse training in the ICU.

"The opportunity to contribute to best practices in the field of paediatric critical care, at the international level, gives me great professional satisfaction. I have delivered numerous keynote addresses at international meetings and written chapters in textbooks to take our protocols at Fortis Escorts to the world so that many more patients can benefit from our work", she added.

As a fellow and member of Indian Paediatric Association she is involved in various roles like encouraging and promoting welfare of the infants and children with heart disease, creating common database for Paediatric cardiology, increasing awareness among practicing physicians and paediatricians regarding optimal care of children with heart disease and their early referral institutions with paediatric cardiology and surgery services.

About BIRAC

BIRAC is a Schedule B, Section 8 (not for Profit) Public Sector Enterprise, under the aegis of Department of Biotechnology (DBT), Government of India. Established as an interface Agency to strengthen & empower the emerging Biotech enterprise to undertake strategic research & innovation, addressing nationally relevant product development needs.



Impacting a Billion Lives



Supporting Early & Late Stage Innovation Research

- Ignite new Ideas Biotechnology Ignition Grant (BIG)
- Support early stage research for proof of concept validation (SBIRI)
- Support academia to develop technologies/ products - PACE (Promoting Academic Research conversion to Enterprise)
- Facilitation technology validation & development — Contract Research Scheme (CRS)
- Development of PoC by Academia with/Without involvement of Industry — AIR (Academic Innovation Research)
- Partnership with industry for high risk discovery led Innovation (BIPP)

Product Innovation & Commercialization through partnerships

- BIRAC - DBT - BMGF - Wellcome Trust • NESTA • USAID • TEKES
- CEFIPRA - BPI - FRANCE • UK Trade & Investment (UKTI) • WHO
- University of Cambridge - Judge Business School

- FICCI • CII • CDSA • WISH • TISS • BCIL • ICMR

- TIE - Global • IAN (Indian Angel Network) • TATA - TRUST • ISBA
- C-CAMP • FIIT • IKP • Venture Centre • KIIT-TBT • SIIC-IIT Kanpur

700

Startups & Entrepreneurs Supported

862

Core Total Funding Support

707

Projects Supported

Enabling Services for promoting the Innovation Ecosystem

- IP Management
- Technology Transfer & Acquisition
- Access to Research Resources & Bio-incubation Space
- Mentoring & Capacity Building

148

IP Generated

2

Regional & Entrepreneurship Development

30

Bio Incubators Supported

100

Products & Technologies Developed

3,00,000

sq.ft. of Incubation space created

7000

Participated in skill training workshops

The mandate of BIRAC is to nurture & empower the biotech innovation ecosystem. To Serve various dimensions of its mandate, BIRAC operates mainly in 3 verticals :

- Investment schemes providing funding support to entrepreneurs, start-ups, SMEs & Biotech Companies for all stages of the product development value chain.
- Entrepreneurship development focuses not only on the funding support, but also on making available the right infrastructure, mentoring & other networks for technology transfer & licensing. IP & business mentoring including regulatory guidance.
- Strategic Partnership group works closely with all partners- national & international which includes Government Departments & Ministries both Central & State, Industry organizations, international bilateral agencies, philanthropic organizations & corporate sector, to leverage the strength & expertise & mobilize resources & extend the outreach of its activities for affordable product development.

BIRAC in association with TiE-Delhi NCR also announces Women Entrepreneurs Award.

Date of Launch: 15th December, 2017

Details about the award programme will be available soon.



Biotechnology Industry Research Assistance Council

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COVER STORY



**DR SHRILAKSHMI
DESIRAJU**

Co-founder, Director- Business
Development, Triphase
Pharmaceuticals

HAVING A PATENTED
TECHNOLOGY IN
THE SPACE OF
PROBIOTICS, DR
SHRILAKSHMI
DESIRAJU
HAS MADE A
SIGNIFICANT
DENT IN THE
PHARMA UNIVERSE
DOMINATED
BY LARGE
CORPORATIONS BY
LAUNCHING THREE
PRESCRIPTION
DRUGS

Developing the field of Probiotics

After relocating from Canada to India, Dr Shrilakshmi Desiraju started Triphase Pharmaceuticals initially as a services company in 2009. She started her journey of innovation with Triphase in the field of Probiotics in 2011. The first big challenge that Triphase solved was in eliminating the cold chain from the Probiotics industry. It filed a patent for a new Platform technology by which Probiotics could withstand temperatures of up to 200 ++ degrees. In one single stroke the company had eliminated any need for cold storage.

Dr Shrilakshmi has been involved in the strategic planning and implementation of growth for her current organisation. A state of art research and development wing for probiotic research at Mysuru and sales offices in south of India and in Prince Edward Island, Canada has been established since 2009.

"Substantiating our stride for excellence in the healthcare domain, we have our arms spanning around Probiotic Pharmaceutical products, and ingredients for both human and animal nutrition. The products are designed to help manage a disease with its range of probiotics, pre- biotics and specialty enzyme for the Gastro-intestine, Gynecology, Metabolic syndrome disease areas", explained Dr Shrilakshmi.

Dr Shrilakshmi has a MBA degree in Technology Commercialisation from University of Alberta, Canada, a PhD degree in Medicinal Chemistry from the Vikram University Ujjain (M.P), and a post-doctoral experience from the Indian Institute of Science (IISc), Bengaluru. She has a strong publication record in both scientific and business publications and is recipient of several international awards.

"Establishing an R&D company and being able to empower my people,

has been the biggest highlight of my career. Initially we had a tough time getting through cold calls and in getting business accepted from the clients", shared Dr Shrilakshmi.

Under the leadership of Dr Shrilakshmi, Triphase has successfully launched three prescription drugs in India since 2009 and three new ingredients in North American market. The three products, Viz, a probiosac for the cure of acute travelers and antibiotic assisted diarrhoea; Lactovag, for gynecological health; and trigizyme, for gastritis, are frequently prescribed by physicians.

Recently, Triphase has secured series A venture funding by a fortune 500 pharma company to develop robust R&D in the field of Probiotics. Although the amount has not been disclosed, Dr Shrilakshmi looks forward to developing a robust R&D centre in the probiotic domain. "This investment comes in the form of a strategic partnership, where in Triphase focuses exclusively in developing new R&D products and the investor company looks into developing the new markets for the probiotic products. This funding has been made to enhance research in the Triphase proprietary temperature stable Probiotic platform and its related collaborative work", explained Dr Shrilakshmi.

Besides being awarded with Business women of the year awarded by e-Merg, 2014 under the leadership of Dr Shrilakshmi Triphase received Innovation excellence award from Federation of Karnataka Chambers of Commerce, 2015, India's Small Giant award for the most promising small and medium size company, 2014 and was winner of Economic Times-Power Of Ideas, 2016.

Translating innovative research

Bengaluru based startup Pentavalent Bio Sciences took to the winning stand at the 5th edition of Tata Social Enterprise Challenge 2016-17 held in January at the Indian Institute of Management Calcutta (IIM-C). The startup won a winning amount of Rs 2.5 lakh.

Dr Bhavani was absolutely ecstatic with her win. "This exposure was really required. The Jury's input and mentoring helped us a lot in improving our business model. Initially it was only us who believed in our product, but now we believe that our product can reach the end user", shared Dr Bhavani.

Under her leadership, the startup is currently developing an innovative diagnostic tool using novel in-house FlapCut technology that detects tuberculosis (TB) in patients and helps doctors to prescribe patient-specific antibiotics for treatment.

"Our company is a fully integrated biotech start-up and social enterprise that provides innovative solutions from discovery to development, leveraging cutting-edge science, cost effective molecular diagnostics and new ideas and technologies in the diagnostics market", Dr Bhavani pointed out.

Dr Bhavani ventured out with the startup right after completing her doctorate from the Defence Food Research Laboratory attached to the Defence Research and Development Organisation (DRDO) in Mysuru.

The company has its own integrated in-house R&D unit in the campus of Institute of Bioinformatics and Applied Biotechnology (IBAB), Bengaluru. The company is rapidly growing even in the field on diagnostics, developing novel diagnostic systems for sensitive and

specific detection of those diseases which are highly challenging to diagnose and treat.

"Currently there are two common methods of diagnosing TB -- geneXpert and other by doing sputum test that is done through isolating the bacteria. However, in the isolation test, the bacterial growth takes minimum of 8 weeks, and both this methods are time intensive. Our technology will breach the time barrier and will help in diagnosis within a stipulated time of around 4 hours and at the same time it will help to diagnose 10 antibiotic susceptibility that in future will help with better TB treatment and also reduce the number of patients suffering from multiple drug resistance (MDR) TB," said Dr Bhavani.

The startup received Rs 50 lakh financial support in 2015 from the Biotechnology Ignition Grant (BIG) launched by the government's Biotechnology Industry Research Assistance Council (BIRAC) in partnership with the life sciences technology and innovation hub, Centre for Cellular and Molecular Platforms (C-CAMP). "We are intending to utilize this fund for development of novel vaccines for influenza. Besides this, we have been lucky to receive tremendous support from KBITS (50 lakhs) and FICCI- Millennium Alliance (30 lakhs) for tuberculosis project as well", shared Dr Bhavani.

"I am learning every day and it has been an interesting journey so far. I always keep my spirits high. My passion for science has helped me reach this point in my career. I am trying to make sure that the research I do gets translated into a product and reach the users in the market", said Dr Bhavani.



DR BHAVANI PV
Co-founder and Chairperson,
Pentavalent Bio Sciences

HAVING PHD FROM DFRL IN MYSURU, DR BHAVANI PV IS INVOLVED IN DEVELOPING A DIAGNOSTIC TOOL THAT DETECTS TB IN PATIENTS AND HELPS DOCTORS TO PRESCRIBE PATIENT-SPECIFIC ANTIBIOTICS FOR TREATMENT



DR CHAITRA HARSHA

Managing Director, Vipragen Biosciences Pvt Ltd; Chairman & Chief Mentor, Blossom Group of Hospitals

AS A SERIAL ENTREPRENEUR, DR CHAITRA HARSHA IS DEVOTING HER ENERGY TO ALL HER VENTURES IN A PARALLEL FASHION AND WINNING REWARDS!

Reflection of a serial entrepreneur

Dr Chaitra Harsha is not bound down by a specific venture but aspires to take the skies down and make her dreams take shape. She is a testament of what a woman can achieve as an entrepreneur and in a career spanning just eight years, Dr Chaitra has been a part of many companies that she either established or has been part of the growth curve from the nascent stages.

"We are all living in an exciting era, with many innovations happening across all sectors. With such an opportunity, it would be a waste of talent and time if one continues to focus their energy in one dimension. I never believed in restricting myself to a particular sector or interest and will continue to explore newer opportunities globally as the time moves ahead", shared Dr Chaitra.

Academically, Dr Chaitra boasts of MBBS from Bangalore University, PhD from IISc and MPWE (Management Programme for Women Entrepreneurs) from IIM-Bangalore. She is also a Charter Member at Tie (The Indus Entrepreneurs) and currently contributes to various leadership programmes across India.

Dr Chaitra began her career as an entrepreneur with the inception of Genedynamix right after passing out of IIM-B, in the field of bioinformatics, intellectual property rights and data analysis. She found success in her very first stint and moved on with another milestone in the form of Smile lounge, a cosmetic dental chain. In just a span of two years, the dental chain achieved success and was later divested to an international

dentistry chain.

Further on, she recognized the untapped opportunity of medical tourism and wasted no time in establishing Advina Health, which caters to medical tourism internationally. Looking at the requirement of a hospital which can provide quality healthcare at an affordable cost, she went on to be a part of Blossom Group of Hospitals as Chief Mentor. With Blossom, she is trying to integrate telemedicine with healthcare and reach out to remote locations at a fraction of the original cost.

At the moment she is focusing on Vipragen Biosciences, which has an intellectual campus at Mysuru. The company benefitted when Dr Chaitra put her management skills learnt at IIM-B to ensure that the start-up makes the right pitch and has emerged as one of the pioneers in the industry with proven research capabilities in pre-clinical biology, microbiology, molecular biology among others.

In a short time since its inception, Vipragen has achieved global accreditations by CPCSA, AAALAC and is on the verge of achieving GLP accreditation. Vipragen was also one among the 11 biotech start-ups to get the prestigious recognition at Elevate 100, a Government of Karnataka initiative to fund innovative start-ups in the state.

On a personal note, she is an avid traveler and derives her creative inspiration from Western Ghats which she frequents very often. She is also adept at nature photography and is honing her skills at bird photography.

Revolutinising personal care

In 2011, Dr Caroline Mathen founded a biotech venture called OCT Therapies, that was born out of the intense desire to bring cutting-edge technology to the masses. This exciting start-up focuses on the use and application of adult stem cells to facilitate superior healing. The company boasts of the maximum number of regulatory approvals in the country, and is also registered with the National Apex Committee for Stem Cell Research and Therapy (NAC-SCRT).

"The greatest challenge in stem cell research in India today is in obtaining regulatory approvals as that is very time consuming. Apart from this, I can take everything else in stride", Dr Caroline Mathen pointed out.

OCT Therapies and Research is among the few promising start-ups to receive financial support of Rs 50 lakh from the Sustainable Entrepreneurship and Enterprise Development (SEED) scheme recently launched by the life sciences technology and innovation hub, Centre for Cellular and Molecular Platforms (C-CAMP), in partnership with the government's Biotechnology Industry Research Assistance Council (BIRAC).

OCT Therapies is also poised to revolutionize personal care by introducing stem-cell based cosmetics and has recently commercialized the OCTT Hair Serum and OCTT Skin Serum for hair and skin rejuvenation. Alongside, she has also developed a stem-cell derived wound healing product – an intelligent off-the-shelf cell-based product that facilitates skin regeneration for burns (acute wounds) and non-healing ulcers (chronic wounds). "This is going

to be a potential game changer. Interventional wound therapies will no longer be a passive activity but a proactive strategy to help achieve superior, aesthetic and optimal wound healing. Skin grafting will soon be a thing of the past", shared Dr Caroline Mathen.

Always challenging herself to move out of her comfort zone, Dr Caroline Mathen constantly re-invents her role - evolving from an academician to a researcher, and currently as a pioneer in Stem Cell Research. She has multiple patents and publications to her credit- a testimony to her decade-long experience in cell biology.

"Most medical experts view stem cell research as the new promise in medicine, something that could transform millions of lives. In India, permissible research areas include adult stem cells and umbilical cord blood stem cells. Thus, adult stem cells, pose no moral dilemma", she shared.

Dr Caroline Mathen, who is partial to Manglorean and Keralite vegetarian food, has a doctorate in the field of Zoology from Mumbai University.

A piece of advice to budding women entrepreneurs- "Women entrepreneurs face more challenges than men because they take on multiple roles at family and work. My advice would be to take in all the support possible from every source, be it family, friends or work colleagues. Network extensively with like-minded people. You will find that there are good people willing to collaborate if your rationale and foundations are strong. Aim to be financially independent as this independence will lead to freedom in a lot of other areas", said Dr Caroline.



DR CAROLINE MATHEN

Founder & CEO,
OCT Therapies & Research

OCT THERAPIES, A BIOTECH VENTURE FLOATED BY DR CAROLINE MATHEN, OUT OF AN INTENSE DESIRE TO BRING CUTTING-EDGE TECHNOLOGY TO THE MASSES, HAS COMMERCIALISED STEM-CELL BASED COSMETIC PRODUCTS



**DR PARUL
GANJU**

Co-founder, Executive Director,
Ahammune Biosciences

HAVING PHD IN
SKIN BIOLOGY
DR PARUL GANJU
STARTED THE
FIRST DRUG
DISCOVERY
COMPANY TO
FOCUS ON THE
DEBILITATING
DE-PIGMENTING
DISORDER
VITILIGO, WITH
A PROJECTED
MARKET OF \$2.7
BILLION

De-pigmenting Vitiligo disorder

Pune based Ahammune Biosciences is one of the earliest start-ups to have been granted a three-year tax holiday by the government. Founded in May 2016 by Parul Ganju, PhD in skin biology and Dr Krishnamurthy Natarajan, Professor, Jawaharlal Nehru University (JNU), this drug discovery company is focusing on immune related skin disorders.

Parul Ganju started her journey with Ahammune after completing her PhD in 2014 from the National Institute of Immunology, New Delhi. Dr Krishnamurthy Natarajan, Professor at JNU supported her in this venture.

Ahammune is a Department of Industrial Policy & Promotion (DIPP) recognized start-up with current focus on the debilitating de-pigmenting disorder Vitiligo.

"The patchy white appearance of skin in Vitiligo is a cause of immense psychological stress for the people affected, where they have to live with it throughout their life. The social problems associated with the disease in India adds to the impact of Vitiligo on quality of life of patients. Vitiligo therapeutics has a projected market of \$2.7 billion, with a CAGR of 8.8 per cent, making it an excellent business proposition. Ahammune is, to our knowledge, the first Vitiligo-centric drug discovery company. The emphasis at Ahammune is to first develop novel therapeutics in-house, and then establish collaborations or joint ventures, as necessary, to take the treatment options forward", said Parul Ganju while interacting with BioSpectrum India.

Ahammune is a resident incubatee company of Venture Centre, National Chemical Laboratory (NCL)'s technology business incubator. Ahammune's R&D

laboratory has been recognized by Department of Scientific and Industrial Research, Government of India (DSIR). The Venture Centre is India's largest science business incubator specializing in technology startups offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences & engineering.

"The company has raised around \$1 million through angel investors who believe in our cause. We will go for another round of funding soon as we plan to initiate clinical studies. We are working out a revenue generation model", Parul Ganju stated.

CSIR-NCL, Pune and CSIR- Institute of Genomics and Integrative Biology (CSIR-IGIB), New Delhi together have recently signed a Patent Licensing agreement with Ahammune Biosciences for Vitiligo drug development.

Earlier this year, Ahammune won the top prize in the Pitch Fest event under the Small molecules, Biologics and Biotech category, at the Start Up Bio 2017 in Bengaluru. The company received a certificate and an award of Rs 1 lakh, presented by Kiran Mazumdar-Shaw. It also won "most promising startup team of the year award" at Clarion Call 2.0 organized by IIM Calcutta Alumni Association.

"Our vision is to foster new therapies for immunerelated dermatological diseases through innovative drug-discovery programs. Drug discovery, as a field, has not been too appealing to Indian investors as it is capital intensive with long timelines and is considered risky. Finding the right set of people who believe in our vision and fund this cause is thus challenging," Dr Parul pointed out.



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DR MANJIRI M. BAKRE

Founder & CEO,
OncoStem Diagnostics

AFTER LEADING THE CANCER DRUG DISCOVERY AND MULTI-DISCIPLINARY RESEARCH ON 'POINT-OF-CARE' DIAGNOSTICS AT RENOWNED COMPANIES, DR MANJIRI M. BAKRE IS NOW DEVELOPING COST EFFECTIVE AND RELIABLE TESTS FOR PERSONALIZED CANCER TREATMENT

Assisting breast cancer diagnosis

The loss of a close friend at a young age to breast cancer got Dr Manjiri M. Bakre thinking and triggered a venture in the form of OncoStem Diagnostics in 2011. It is a Bengaluru-based oncology focused start-up that recently raised \$6 million from venture capital firms Sequoia Capital India Advisors and Artiman Ventures. Early funding and support for OncoStem Diagnostics came from Artiman Ventures and Biotech founder Kiran Mazumdar-Shaw.

A cell biology and cell signaling veteran with 18 years of experience in research and technology in India, US and Singapore, Dr Manjiri founded OncoStem with the vision of developing and delivering innovative, cost effective and reliable tests for personalized cancer treatment planning. OncoStem is an ISO 15189/NABL accredited laboratory and maintains regular quality by participating in external quality assurance programme with international bodies such as NordiQC (Denmark) and CAP (USA).

OncoStem has recently launched their flagship product "CanAssist-Breast" - a robust, cost effective, 'Morphometric ImmunoHistoChemistry' (mIHC) based test. CanAssist-Breast is globally validated, ISO 13485 accredited, CE-IVD marked and under US FDA 510(k) review.

"Similar competing risk of recurrence prediction tests are available from Europe and the United States, but they are five to six times more expensive than what OncoStem's prices are and have longer turn-around time", Dr Manjiri pointed out.

After winning the Bio-Accelerate award at Bangalore India Bio in 2014, Dr Manjiri joined hands with Core Diagnostics that serves as the exclusive partner to distribute the

OncoStem product.

Previously, Dr Manjiri has lead cancer drug discovery and multi-disciplinary research on 'point-of-care' diagnostics at renowned companies including Philips Research at Bengaluru and The Netherlands. Her expertise on cell biology led her to receive Young Scientist Award from International Union of Biochemists and Molecular Biologists (IUBMB). She has won the Best Entrepreneur- Global Women in STEM-Start-Up award, an initiative of Meera Kaul Foundation, US in 2016.

Her achievements include multiple patents and research articles published in many peer reviewed journals such as Nature Medicine, mentored students and presented work at international conferences such as ISSCR, Biomarkers, IACR. She has also received the Best Paper Award (given to top 1 per cent papers published annually) by Journal of Biological Chemists.

Dr Manjiri as a single woman founder has shown an exemplary display of skills, grit, focus, patience and attitude throughout the journey of OncoStem which made it possible to convert an idea into a product on the market. Being a Cell Biology veteran she had the required technical background but learned to convert an idea into a product on the job. She gives credit to her team for the success of OncoStem!

"We are planning to increase the footprint by setting up laboratories in different regions (Asia, Europe) to run the test, and to help in reducing turnaround times as the business grows. We wish to completely automate the test and package it as a kit which can be easily distributed across the globe, to touch the lives of the millions of breast cancer patients" shared Dr Manjiri.

Managing peritoneal metastases

For many cancer patients suffering from peritoneal cancer who tend to lose hope, the revolutionary Pressurised Intraperitoneal Aerosol Chemotherapy (PIPAC) has come as god-sent. But more than that, it is Hyperthermic Intraperitoneal Chemotherapy or HIPEC that requires greater expertise. Cancers of peritoneal origin benefit significantly from HIPEC.

Dr Aditi Bhatt is one of the first surgeons to perform HIPEC in India. "Peritoneal cancer treatment is still in its infancy in India. By the time the patient reaches a specialist, it is usually too late to offer definitive treatment. Misdiagnoses, apprehensions about extensive surgery for peritoneal cancer and the cost involved are the major barriers", stated Dr Aditi.

She is a trained surgical oncologist and her main focus for the last six years has been on the management of peritoneal carcinomatosis (Pseudomyxoma peritonei, colorectal cancer, ovarian cancer, gastric cancer, mesothelioma and others).

Peritoneal cancer is a rare disease and is very difficult to diagnose. Peritoneal lining is a thin layer covering all organs in the abdominal cavity, including stomach and intestine. The widespread acceptance among the oncology community at large of cytoreductive surgery and HIPEC as a potentially curative treatment for peritoneal metastases has paved the way for innovative new therapies that could benefit a larger proportion of patients.

"In early stages, peritoneal cancer may not cause symptoms at all. Frequently, peritoneal cancer is even discovered by complete surprise during surgery for the primary tumor. Even during the asymptomatic stage, the disease may already be widespread and

advanced, which supports the reputation of peritoneal cancer as a silent killer", Dr Aditi explained.

Dr Aditi completed her MS in general surgery from BJ Medical College, and received a super specialty degree in surgical oncology from Gujarat Cancer and Research Institute. She also pursued a Fellowship in Peritoneal Surface Malignancies from the Institute Gustave Roussy in Paris. Before joining Fortis Hospitals, Dr Aditi gathered some great experience at the Mazumdar Shaw Cancer Centre and HCG Bangalore Institute of Oncology.

At the recently held Indian Cancer Congress in November 2017, a workshop was organized by Dr Aditi Bhatt and her team focusing on Peritoneal Surface Malignancies. Dr Aditi provided an overview on peritoneal surface oncology, surgical treatments, their rationale, methods, results and new developments in this field. She was the associate editor with Dr Paul H. Sugarbaker, Director of Surgical Oncology, Washington Cancer Institute, for the special issue of the Indian Journal of Surgical Oncology on peritoneal surface malignancies in 2016. Dr Aditi is currently involved in developing a robust system for collection and publication of Indian data pertaining to the management of peritoneal metastases and conducting multi-institutional studies.

"Setting up of a peritoneal cancer unit will help in creating awareness about the disease and the treatment options, improve treatment results, cut down the cost, focus on other aspects like rehabilitation after treatment and providing psychological support to patients and their families, which is what I am looking at in the near future", Dr Aditi shared.



DR ADITI BHATT

Surgical Oncologist,
Fortis Hospitals

AFTER PURSUING PERITONEAL SURFACE ONCOLOGY AS A SPECIALTY FOR SEVEN YEARS, DR ADITI BHATT WISHES TO DEVELOP A ROBUST MANAGEMENT SYSTEM FOR PERITONEAL CANCER IN INDIA



DR BANI ANAND

Founder & Managing Director,
Hairline International
Hair & Skin Clinic

A DOCTORATE
IN TRICHOLOGY
HELPED DR BANI
ANAND TO TAKE
HAIR & SKIN CARE
TREATMENT FROM
NON-SURGICAL
COMPETENCIES
TO SURGICAL
TREATMENT
OPTIONS

Transforming hair & skin care

In just 8 years since its inception, Hairline International Hair and Skin Clinic boasts of a turnover of Rs 12 crore per annum. Hairline International has been ranked as #1 Trichology Clinic in Bengaluru for the third year in a row, as per the All-India Lifestyle Hospital and Clinic Survey conducted by i3RCInsights Pvt Ltd. Hairline International surpassed numerous city-based organizations to make it to the top of the list. With this third consecutive ranking, Hairline International's work in the field of hair and skin care management stands recognized for its quality of services offered.

Under the stewardship of Dr Bani Anand, Hairline International grew from non-surgical competencies to surgical treatment options and today is making in-roads in regenerative medicine as well. Spread over seven clinics in Bengaluru, with a research centre, pathology lab and a stem cell lab in the making, Hairline International has created a strong foundation with medical professionals in varying fields of diabetology, gastroenterology, gynaecology, trichology and dermatosurgeons as well as cosmetic surgeons.

"We have introduced a lot of new machines to enhance the quality of research conducted and to create a base of information that is reliable and which helps in understanding underlying causes of hair and skin ailments, allowing for a change in lifestyle," she pointed out.

Dr Bani Anand is successful entrepreneur with an MBA degree in Marketing from the UK and a Doctorate in Trichology from Commonwealth Vocational University, Makenzie, Hahke, Tongatapu, Kingdom of Tonga.

"I started out on my own primarily

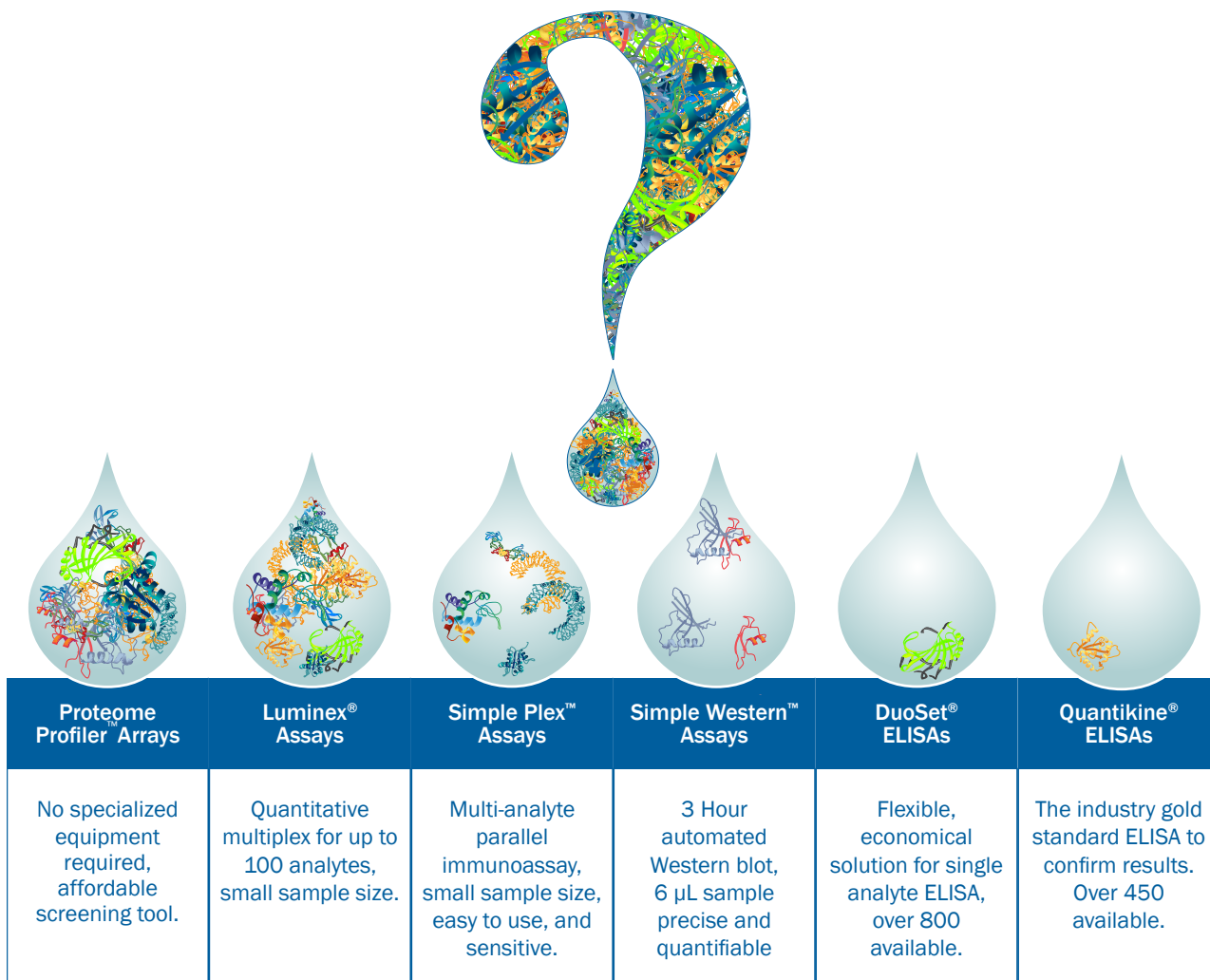
on the basis of market and customer understanding. Through debt funding, I started one hair and skin clinic and in a span of eight years, we have built seven dermatology clinics in Bengaluru. My driving force is pure focus, dedication, constant endeavour to learn and to evolve with change in terms of patient, professional or technological need", Dr Bani Anand shared.

To provide world class customized treatment plans for Trichology and Skin Care, Dr Bani Anand has tied up with numerous international organizations such as Cindycut International, USA and FEC Hong Kong for Hair Replacement services and doctor memberships of National Alopecia Areata Foundation, American Society of Cell and Gene Therapy, Global Woman's Loss Council, European Academy of Dermatology and the American Academy of Dermatology.

Dr Bani won awards like Outstanding Women's Awards in Healthcare 2017, named among the 50 Outstanding Women in Healthcare at World Health & Wellness Congress Awards- 2017. Her company was received many awards including best quality initiative under Assocham Meditravel excellence award 2017 from Ministry of Commerce and Industry.

On challenges that she overcame during her career she said "I think I just want to do everything at the same time so that's my biggest challenge. I'm always buzzing with ideas but execution has a lot of challenges be it time, regulatory framework, human resource, information, territorial implications etc. so you understand that patience and resilience is the first thing one has to learn as a tool to handle all kinds of challenges."

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DR RISHMA DHILLON PAI

President, Federation of Obstetric
and Gynaecological Societies of
India (FOGSI)

A CONSULTANT
GYNAECOLOGIST,
DR RISHMA
DHILLON PAI,
WORKING
TOWARDS
SUPPORTING AND
PROTECTING THE
INTERESTS OF
PRACTITIONERS
OF OBSTETRICS
AND
GYNAECOLOGY IN
INDIA

Compromising social life to realize a dream

Dr Rishma Dhillon Pai, President of the Federation of Obstetric and Gynaecological Societies of India (FOGSI) where she along with FOGSI work towards supporting and protecting the interests of practitioners of Obstetrics and Gynaecology in India, encourages dissemination of knowledge and education as well as research in the field and also serves to advocate the cause of reproductive health and rights.

Dr Rishma Pai is a consultant Gynaecologist at the Jaslok and Lilavati Hospitals, two of the best known and reputed hospitals in Mumbai. Dr Rishma was a part of the team from Jaslok, which was the first in India to introduce use of non-surgical MRI guided focused ultrasound for the management of fibroids. She was also the first in India to introduce the use of balloon ablation therapy, a ten-minute solution for heavy bleeding, which can avoid major surgery like hysterectomy. She also has the distinction of delivering 60 year old women which is one of the oldest women in India.

Sharing her expectations from the job before joining this field she said, "Though I am trained towards the surprise situations and emergencies that my profession brings, I certainly did not think it would become this busy. This is perhaps because along the way I took up many other responsibilities such as becoming the President of FOGSI. I did not plan all this when I started my practice. It has taken me many years to reach where I am today, and I have committed a large part of my life to helping the federation. Having said that, my work also gives me a lot of satisfaction as I am able to make a difference and contribute to policy changes towards women's health in the

country.

Dr Rishma is a part of the Medical Team from Lilavati Hospital, Mumbai and Fortis Hospital, New Delhi that was the first to introduce techniques such as laser hatching to increase pregnancy rates in patients undergoing IVF. Her pioneering work in the field of oocyte freezing, and ovarian tissue freezing has enabled women to freeze their eggs prior to undergoing cancer treatment, thus preserving their fertility.

Talking about the challenges she faced while climbing the ladder of success she says, "Everyone has to make some compromises to realize a dream and reach a certain stature in life. For example, I gave up a part of my social life and could not spend much time with my children because I had to travel a lot. It is important to work hard if one wishes to reach a desired goal and climb up the career ladder."

"Challenges are unavoidable in the path to progress. However, I take challenges positively. I got into this profession knowing I would face such situations. They have never seemed to me as impediments and I do try to maintain a balance in all that I do," she added.

Dr Rishma has fostered and promoted international academic exchange by arranging for the first time in the year 2017 an India Day at the Royal College of Obstetricians and Gynaecologists, London with very interactive exchange of ideas and academics between the Indian and British gynaecologists.

She believes, "I would say discipline, motivation, desire to excel, and not compromising on anything. These are certain choices I made in life -- choices that I am happy about."

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**DR NANDITA
PALSHETKAR**

Medical Director,
Bloom IVF Group

PROFICIENT AT
DIAGNOSING
ILLNESSES AND
PRESCRIBING AND
ADMINISTRATING
APPROPRIATE
TREATMENT/
MEDICATION
FOR VARIOUS
GYNECOLOGICAL
PROBLEMS DR
NANDITA PALSHETKAR
IS INSTRUMENTAL
IN INCREASING
PUBLIC AWARENESS
FOR INFERTILITY
PROCEDURES

Planning and strategizing properly to achieve success

Dr Nandita Palshetkar, Medical Director, Bloom IVF Group is proficient at diagnosing illnesses and prescribing and administering appropriate treatment/medication for various gynecological problems.

She has pioneered many first-time techniques and procedures in India. She was the first person to establish assisted laser hatching in India in 1998, and deliver the first pair of laser hatching twins in India. She also delivered the first baby in India with three mothers, that is, with the help of test-tube baby and surrogacy techniques. She also established the spindle view technology in India so as to prevent damage to the genes during test-tube baby procedure; and the first egg and ovarian tissue bank in India.

Sharing her expectations from the job before entering this field she said, "Women are fighters and easily catch up. I've noticed over the last few years that a lot of women have delayed their families in order to settle themselves in their careers and then start a family. So I don't know how true it is anymore that there is a lag in careers of men as well as women."

She currently serves as Professor in Obstetrics and Gynecology at DY Patil Medical College, Navi Mumbai and also teaches for the super specialty degree (FNB) Fellowship in Reproductive Medicine National Board, Delhi.

Talking about the challenges she faced while climbing up the ladder of success she says, "Definitely as a women you have to work twice as hard, but Gynecology being a female oriented field, there was a lot more opportunities. However women should be given the same opportunities as men in this society to succeed and this is a change which needs to come around in every field.

Women are fighters and easily catch up. I've noticed over the last few years that a lot of women have delayed their families in order to settle themselves in their careers and then start a family. So I don't know how true it is anymore that there is a lag in careers of men as well as women."

"The key challenges I face now is mainly the distrust of society towards the doctor community. There needs to be a change in the attitude of society towards doctors and Doctors must put in an effort to show that they care", she added.

Dr Nandita has been instrumental in increasing public awareness in India for infertility procedures such as IVF, IUI, ICSI and ART by spreading the message of a possible solution through various publications and talk shows. As part of this effort, she has also conducted free infertility camps across India and also been a part of many awareness drives and initiatives.

Dr Nandita completed her MD in 1993 from Mumbai University. She was also awarded the FCPS in the same year from the College of Physicians and surgeons Mumbai. Subsequently she was awarded the ICOG from the MICOG Mumbai. She has been instrumental in helping over 25,000 Indian and international couples to have children and become parents.

She believes that planning and strategizing properly and then giving your 100% to your goal can be an important factor in achieving the success.

"My advice would be to plan and strategise properly and give in your 100%. Don't worry about the result if you have given it your best. Always remember things always happen for a reason. Passion, self-belief and strategy will take you a long way. Minds that cure, hearts that care is my mantra."

Learning to adapt and accept circumstances

Dr Jugnu Jain, a molecular geneticist and cell biologist by training and obtained her PhD from Cambridge University (UK), followed by a post-doc and instructorship at Dana Farber Cancer Institute and Harvard Medical School at Boston started Sapien and Saarum along with her co-founders, Prithi and Sreevatsa in 2011 after returning to India. Sapien has fully functional labs located within the Apollo Health City Campus in Hyderabad.

Talking about the journey as a first-time entrepreneur Dr Jugnu, who has over 20 papers to her credit in leading journals including Nature and Science and has two patents to her name says "There was a lot that I did not have experience with - how slow the pace of change will be, the complicated paperwork involved in establishing and running a company etc. We co-founders had detailed business plans but there were many delays and changes that slowed us down and exceeded expense projections. We expected to be where we are today 2 years ago!"

In spite of all odds, she launched Sapien Biosciences as a joint venture between Apollo Hospitals & Saarum Innovations that has created a world-class biobank and personalized medicine company that leverages Apollo's leadership position in healthcare and Saarum's cutting-edge life sciences research expertise for novel clinical and R&D applications. Sapien's primary objective is to use its high-quality bio-repository that integrates ethically consented human samples with associated medical, pathological & treatment data and utilize this resource to develop & deliver high-end diagnostic applications.

Dr Jugnu also worked with Vertex

Pharmaceuticals after her post-doc, where she steered multiple drug discovery projects. She led Vertex's global Immune-Inflammation team, and has significant experience in cancer and diabetes area as well.

On challenges while climbing up the ladder she says "My challenges came from convincing our stakeholders to adopt a new business model like ours, to navigate and get cooperation from individuals in a highly matrixed environment, to instill confidence and trust in our clients that despite being in India we can do a quality job and provide world-class services. Most global companies are concerned about IP protection, timely delivery of projects, having clear regulations that promote rather than impede business. Winning their confidence was a challenge. My challenges had little to do with male domination."

Commenting on success mantra she points out "Persistence and patience, adherence to processes e.g., ethical and regulatory guidelines, and a motivated hard-working flexible team that believes in the long-term vision and drives our success. I save inspiring quotes to refer to, and try to dwell upon three positives at the end of every day, that help me keep going."

Sharing her experience as an entrepreneur she advises the budding women entrepreneurs to be realistic about their business - be prepared for the worst while working for the best. Plan a buffer of at least 6-9 months for the myriad uncertainties that will put a spanner in the works such as GST that wiped out business for 4 months; Learn to adapt and accept circumstances you have little control over - try to see the bright side of it and make the best out of the change."



DR JUGNU JAIN
Co-Founder & Chief Executive
Officer, Sapien Biosciences

STEERING
MULTIPLE DRUG
DISCOVERY
PROJECTS, DR
JUGNU JAIN
STARTED SAPIEN
BIOSCIENCES
TO CREATE A
WORLD-CLASS
BIO-BANK AND
PERSONALIZED
MEDICINE
COMPANY

GOLDEN JUBILEE BIOTECH PARK FOR WOMEN, CHENNAI

Golden Jubilee Biotech Park for Women, Chennai

Golden Jubilee Biotech Park for Women is a successful first of its kind women centric life sciences ecosystem contributing to the 100 Billion-Biotechnology sector - A pioneer in the arena.



PROF MS SWAMINATHAN

Founder Chairman & lifetime mentor,
Golden Jubilee Biotech Park

The Golden Jubilee Biotech Park for Women Society is a not for profit institution conceptualised in 1997 with a Mission of providing opportunities for professionally qualified women to take to a career of remunerative self-employment through the organization of environment friendly biotechnological enterprises. The first phase of the park became operational in May 2001 with a seed funding Rs 4 crore from the Department of Biotechnology. Tamil Nadu State Government allotted 20 acres land. TIDCO implemented with the concept and technical inputs from the M S Swaminathan Research Foundation under the stewardship of Dr M S Swaminathan.



Dr. Sudha Nair, Founder Board Member, Golden Jubilee Biotech Park



Dr. P M Murali, Current Chairman, Golden Jubilee Biotech Park

The Park has 20,000 sq ft of built up area as modules of 1,000 sq ft each and land modules given on long-term lease. Since its inception the Park has turned over 500 skilled women entrepreneurs, technocrats and workers; presently the park has close to 200 women entrepreneurs & technocrats and workers with 40% of them being skilled. The Women workforce is at 60%.

Over the years 38 entrepreneurs have been associated with the Park. Presently it houses 13 companies inclusive of 5 start-ups and three incubates. Over the last few years the Park has had more than 500 interns who have benefitted from the Park and there is an increasing interest among faculty and students who desire refresher programmes and internships. The aim is to target at a 100 incubatees by 2020 and increase the overall turnover of the Park and its occupants to Rs 200 crore by 2020.

The new addition to the Park is the establishment of a 5,000 sq ft Incubation centre with the support from BIRAC under its BIONEST programme. Dr Harsh Vardhan the Union Minister launched this new Incubation Facility at the recently held International India Science Festival in Chennai. This facility can incubate 15 incubatees at a given point of time. There is also a state of art common instrumentation facility, work benches and office space.



Golden Jubilee Biotech Park

GOLDEN JUBILEE BIOTECH PARK FOR WOMEN, CHENNAI



Golden Jubilee Biotech Park team

Other utilities include training halls, business halls and plenty of open spaces.

The Governing Board of the Park believes that this concept can be replicated across India with this Park serving as the Centre of Excellence in Women Entrepreneurship and hopes to build the requisite infrastructure around this vision and 'step up' its activities.

In a recent report published by the Boston Consulting

Group women now control about \$39.6 trillion – 30% of the world's wealth. By 2020, women have the potential to control \$72 trillion globally expected to grow to \$112 trillion by 2025 and a strong work force of 47%. Investing in women headed enterprises and its ecosystem is therefore a sound long term growth strategy for India and the Golden Jubilee Biotech Park for Women is a unique model that has demonstrated success and worth replicating.

Biotech Park for Women is a unique venture established in 2001 with a mission to providing opportunities for professionally qualified women to take up a career of remunerative self-employment through biotechnological enterprises

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- Can accommodate 16 incubatees at a given point of time

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INCUBATEES AT GOLDEN JUBILEE BIOTECH PARK FOR WOMEN, CHENNAI

**DR K RAJESHWARI**

Co-Founder and Managing Director
Bioklone Biotech

Bioklone Biotech Private Limited is a well-established antibody company, co-founded in 2006 by Dr K. Rajeshwari and T Venkataramani. It is located in the Women's Biotech Park, Siruseri, Chennai, India. Ever since its inception, the company has successfully developed monoclonal and polyclonal antibodies to several complex peptides, proteins, drugs, small molecules and whole cells.

Dr Rajeshwari has over 25 years of experience in Hybridoma technology and development of antibodies. She obtained her PhD from Indian Institute of Science (IISc), Bangalore, India following which she was a post-doctoral fellow at Thomas Jefferson University, Philadelphia, USA and a visiting fellow at Tata Institute of Fundamental Research (TIFR), Mumbai, India. The co-founder, Venkataramani is an ex-Naval officer, with 25 years of service in the Indian Navy. He has over 30 years of experience in management and technology.

Bioklone's clients have found its antibody services to be prompt, highly interactive, end-user centric, cost-effective and pro-active. With these USPs, Bioklone has expanded its clientele across research, clinical, diagnostic and pharma sectors, in over 200 organizations in India, USA, UK, Singapore and Germany, in the past eleven years.

**DR SAVITHIRI SHIVAKUMAR**

Founder & Managing Director,
Aaranya Biosciences

Dr Savithiri Shivakumar, PhD, PGDBA is the first woman entrepreneur in her family having gained 17 years of industry, academic and CRO experience. Expertise in preclinical and clinical research while working in Christian Medical College and drug discovery research companies. She has also published patents and research articles. As a passionate and committed trainer, she shares her knowledge in translational research with the young and upcoming generations of entrepreneurs.

Dr Savithiri Shivakumar established the Aaranya Biosciences Private Limited as the premier laboratory for research programs pertaining to preclinical to clinical investigations.

Set up in-vitro lab for cellular, molecular and safety/toxicity studies and established CPCSEA approved small laboratory animal facility to conduct preclinical studies includes disease models, pharmacokinetic studies, antibody production and safety studies as well as statutory laboratory for genetic testing with FISH, Immunohistochemistry, Imaging and sequencing.

Aaranya Biosciences portfolio of services and products includes diagnostic kits, and integrated preclinical services and training bridging academics, clinical and preclinical platform.

**RAMYA KANNAN**

Hi-Rise Food Tech Lab

Ramya Kannan is a B.Tech graduate in Industrial Biotechnology, from Centre for Biotechnology, Anna University Chennai. After completion of the BTech degree, she completed her Masters in Food Production Management, from University of Nottingham, UK. She started her career in Product Development in a private firm in Bangalore and then went on to handle New Product development and Quality Assurance in a leading snack food export company in Chennai. She currently has 15+ years of experience in Food Technology & Food Quality.

HI-RISE FOOD TECH LAB was established in 2010. It is an exclusive NABL accredited Food Testing Lab, offering Microbial Testing Services to the Food Service and Manufacturing Industries. Clients include Exporters & Manufacturers of Food Products, Restaurants, Bakeries, Industrial Kitchens and IT Companies. Company also carries out Food Safety and Hygiene, Good Manufacturing Practices Audits and Trainings.

Golden Jubilee Biotech Park for Women is the ideal place to start a business in life sciences. It provides a platform for Women in Life Sciences to take up the Entrepreneur Journey. To me the Park has strengthened and supported me through my seven years journey as a Businesswoman in the field of Life Sciences.


DR SARA CHANDY

Allied Scientific and Innovative Products

Dr Sara Chandy PhD, is a clinical virologist by training. She did her doctoral studies (2003-2010) at the Christian Medical College, Vellore. A post-doctoral fellowship from University Grants Commission (UGC) to develop diagnostics for emerging viral infections at CMC Vellore (2012-2015) ignited an interest in developing diagnostic kits for infectious diseases. She has trained extensively on various diagnostic platforms at New York Medical College (2003), University of New South Wales (2010) and Hokkaido University (2010). Her involvement in multi-centric studies at sites all over India helped understand diagnostic challenges at tertiary and secondary care centres.

Allied Scientific and Innovative Products, was initiated in 2015 and was involved in marketing diagnostic kits and reagents of reputed companies. Henceforth, it will be involved in manufacturing and marketing indigenous diagnostic kits for infectious diseases. Allied Scientific and Innovative Products will function from the Golden Jubilee Biotech Park for Women at SIPCOT, Siruseri.

The Golden Jubilee Biotech Park for Women at SIPCOT, Siruseri is a scientifically well-structured initiative and is extremely women friendly. It provides good support systems for the first-time woman entrepreneur.


DR SOWMINI KUMARAN

Founder & Managing Director,
Proteogenie Biotech LLP

Dr Sowmini Kumaran has a PhD in Life Sciences from University of Zurich, Switzerland. Her scientific background spans from molecular biology to structural biology. Her passion is to work on the practical applications of proteins, the biological work horses. She founded the company Proteogenie biotech LLP which has been recently incorporated in July 2017. The company seeks to provide cost-effective contract research services in gene cloning, site-directed mutagenesis, recombinant protein production and purification, labelled proteins and bacterial metabolite biosynthesis catering to the needs of academia/ pharmaceutical and biotechnology industries. We carry out detailed research to understand the molecular background and physiology of recombinant protein production to ensure that the provided services and products meet customer needs genuinely.

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Other occupants at Golden Jubilee Biotech Park for Women

Sr. No.	Name and Company	Areas of Expertise
1	Dr Menaga Magendran, Bioneem tec India Private Ltd	Microbial Biotechnology and Natural Product Chemistry
2	Ms Mary Rodrigues, Farm Suzanne Pvt Ltd	Sea foods processing
3	Ms Preeti Sukumaran, Krya Consumer Products LLP	Value addition of NFTP
4	Dr. Rachna Dave, Micro Go LLP	Bio pharma microbes industry research and solutions Start up
5	Ms Lalitha Muralidharan, Asean Aromatics Pvt Ltd	Manufacture of aromatics and natural extracts, essential oils
6	Dr R M Anjana, Madras Diabetic Research Foundation	Diabetes research; development of diagnostic kits and low cost and appropriate foods
7	Ms Uma Ramaswamy/ Ms Bhagyalakshmi/Ms Neeraja, Nouveau Dietitque Pvt Ltd	Neutraceuticals, Product Development
8	Ms Lalitha venkatakrishnan, Heavenly Fuel Pvt Ltd	Personal care & Health care
9	Ms. Poornima Velusamy, M/s. Exonn Technologies Pvt Ltd	Botanicals
10	Ms. Geethanjali Radhakrishnan, M/s Adiuvio Diagnostics Pvt Ltd	Diagnostics and devices

Lakshminarayan joins Religare as Chairman

Religare Enterprises has appointed former Home Secretary S Lakshminarayan as executive chairman after undergoing a major overhaul of its board. Following the board's decision, promoter Malvinder Mohan Singh will relinquish his position as non-executive chairman and also resigned as Chief Executive Officer (CEO) of the company. Lakshminarayan is currently non-executive chairman of Shriram Transport Finance. The board has also roped in former Deputy Governor of Reserve Bank of India Kishori Udeshi. Chief executive Maninder Singh, chief financial officer Anil Saxena and company secretary Mohit Maheshwari stepped down with the board deciding to virtually induct a fresh management team. The company plans to sell a stake through an issue of fresh shares. Promoters are in discussion with some of the overseas financial investors that include Shyam Maheshwari led Hong Kong-based SSG Capital and expect to close to the deal shortly.

NCBS Prof Upinder Singh Bhalla wins Infosys prize 2017

Prof Upinder Singh Bhalla from National Centre for Biological Sciences (NCBS) has bagged the Infosys prize 2017 for the Life Sciences category. Bhalla was recognised for his contributions to the understanding of the brain's computational machinery. His investigations have revealed essential neuronal computations that underlie the ability to acquire, integrate and store complex sensory information, and to utilize that information for decision and action.



Bhalla has more than 50 research publications to his credit. He received the Shanti Swarup Bhatnagar Prize of the Council of Scientific and Industrial Research in 2007 for his contributions to Biological Sciences. The same year, the Indian Academy of Sciences elected him as their fellow. Three years later, he also became an elected fellow of the Indian National Science Academy.

The Infosys Science Foundation's prize was announced in the fields of Engineering and Computer Science, Humanities, Life Sciences, Mathematical Sciences, Physical Sciences and Social Sciences. The winners were selected from several nominations received from across universities and institutes. Now in its ninth year, the Infosys Prize for each category consists of a purse of Rs. 65 lakh, a gold medallion and a citation certificate.



DIVYA CHANDRADHAR
Managing Director &
CEO of Bioagile



Divya, a Biochemist by education is currently the CEO of Bioagile Therapeutics. Ms. Divya has several years of experience in Clinical & Pre clinical research industry. Prior to joining Bioagile Therapeutics, Divya has been associated with Advinus Therapeutics, TATA group handling business for domestic and International market and also worked in Clinical CRO's.

Divya holds publications in multiple journals like Asian Journal of Pharmaceutical Technology & Innovation, European Journal of Pharmaceutical and Medical research, Springer, Journal of Medicinal Food, Journal of Dietary Supplements. Divya is considered a one of the youngest entrepreneur in the Clinical Research industry.

Divya holds a Post graduation degree in Biochemistry from Bangalore University and Masters in Marketing Management from Mysore University.

Bioagile Therapeutics provide end to end Clinical Research services right from Medical Writing, Site Management, Data Management and Biostatistical Services. Bioagile Therapeutics caters to Pharmaceuticals, Nutraceuticals, Cosmetics & Medical devices industries.

Bio Agile Therapeutics Pvt. Ltd was honoured as the Emerging Clinical Research Organisation of the year 2017 hosted by "Times Television Network - Times Influence National Marketing Excellence Awards (For Excellence in Healthcare)".

Managing Director Ms. Divya Chandradhar received the award held in The Taj Lands' End, Mumbai on 7th July 2017. The award demonstrates company's commitment and expertise in providing better clinical research services in India. Bioagile Therapeutics is working towards expansion of organisation in different dimension to serve Life science/ biotech industry.

Dr Renu Swarup receives Entrepreneurship Award

Dr Renu Swarup, Senior Adviser in the Department of Bio-technology, Ministry of Science & Technology has been recently awarded with National Entrepreneurship Award, 2017 under Mentor (Government) category in the Recognition Track. Arun Jaitley, Union Finance Minister presented the awards at the National Entrepreneurship Award Ceremony, 2017 in New Delhi.

Dr Renu Swarup also holds charge of Managing Director, Biotechnology Industry Research Assistance Council (BIRAC), a Public Sector Company incorporated by the Government of India to nurture and promote innovation research in the Biotech Enterprise with special focus on Start-ups and SMEs. Through Biotechnology translational research and industry academia partnerships she has supported more than 1000 Start-ups and Entrepreneurs and nearly 500 small companies for innovation research and product development

A PhD in Genetics and Plant Breeding, Dr Renu Swarup completed her Post Doctoral at The John Innes Centre, Norwich UK, under Commonwealth Scholarship and returned to India to take up the assignment of a Science Manager in the Department



of Biotechnology, Ministry of Science and Technology, in 1989. As a Science Manager, issues related to policy planning and implementations are a part of her assignment. She was actively engaged in formulation of the Biotechnology Vision in 2001, National Biotechnology Development Strategy in 2007 and Strategy II, 2015-20 as the Member Secretary of the Expert Committee.



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IISc team develops a neonatal device

A group of researchers at the Indian Institute of Science (IISc) at Bengaluru has developed a device that works by constantly monitoring the baby's body temperature and raise alert the doctor if it goes down below the threshold limit. The device is designed to stream temperature data to the treating paediatrician through a mobile phone so that immediate corrective measures could be taken as and when temperatures drop to dangerous levels.



The researchers have come up with a solution to reduce new-born deaths significantly. The solution addresses the issue of hypothermia, which is one of the major causes of neonatal deaths. Hypothermia is a medical condition where the body rapidly loses temperature. Premature babies, are highly vulnerable to develop the condition as they do not have enough

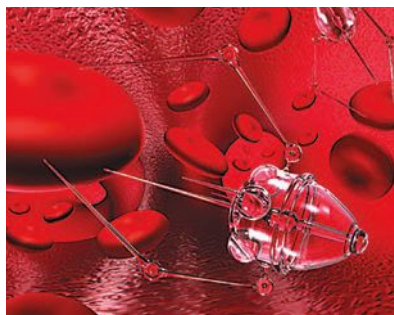
body fat. The device also consists of an accelerometer to keep a track of what angle the baby is being held. It has been tested successfully on 80 children. It has been developed in association with St Johns Research Institute and St John's Medical College in Bengaluru.

IIT- Delhi researchers bank upon nanoparticles for drug delivery

A group of researchers from Centre for Biomedical Engineering at Indian Institute of Technology, Delhi has devised a simple method for achieving controlled and sustained release of drugs using a nanoparticle system.

When conventional drugs are administered to the patients, these get easily cleared from the body and thus it becomes necessary for these drugs to be frequently administered. On the other hand, nanoparticles have been shown to be effective carriers of drugs. The nanoparticle system can increase the blood circulation time of a drug as well as help in targeting the drug to the disease site. This can help in improving the treatment efficiency.

The nanoparticle system developed by the research team shows a combination of release profiles, where there is an initial



release of the drug, which on demand, can be accelerated using radiofrequency. Thus, the system can control when the drug has to be released. It is similar to loading few tablets in a reservoir and triggering when and how more drugs are to be released as per the requirement.

So, one can load different types of drugs used in combinatorial therapy and control the sequence of their release in body using the radio-frequency trigger.

Scientists design hybrid material for cancer diagnosis

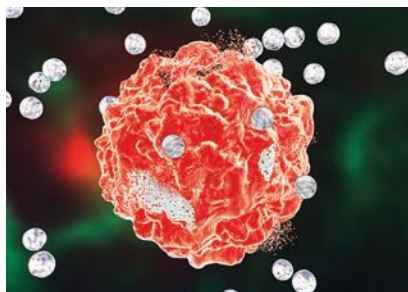
A group of scientists from the Indian Institute of Technology (IIT) Ropar, Punjab, and IIT Mandi, have been working on the overexpression of biotin receptors on cancer cells and enhanced production of thioredoxin reductase enzyme in cancer cells for cancer diagnosis. As part of the study, breast and cervical cancer cell line based experiments have shown encouraging results.

The researchers have developed a hybrid assembly by binding naphthalimide moiety to carbon dots using disulphide covalent bond. In normal cells, there is very little level of thioredoxin reductase enzyme, which is detected by a yellow light emission. Whereas in case of cancer cells, there is an elevated level of the enzyme, which is detected by a blue light emission.

In this arrangement, the carbon dots behave as an energy donor and the naphthalimide moiety as an acceptor, thus establishing fluorescence resonance energy transfer (FRET). The naphthalimide used here can also act as a cancer therapeutic. The nanosensor was found to reduce the viability of cancer cells up to 70 per cent. The naphthalimide that gets released when the disulfide bond is broken is responsible for the destruction of cancer cells. Since naphthalimide is expensive, the researchers are trying to develop a cheaper substitute.

Scientists from India and Russia design molecules against cancer

Scientists from the National University of Science and Technology (NUSAT) (NUST MISIS), Moscow, and the Saha Institute of Nuclear Physics, Kolkata have developed star-shaped gold nanoparticles that



can selectively destroy cancer cells. These stable, inexpensive and non-toxic particles will also make it possible to detect cancer at an early stage.

Star-shaped nanoparticles appear to be most efficient in photothermal therapy (PTT) that uses light radiation for the treatment of many medical conditions, including cancer.

When a nanoparticle reaches the affected area, it is blasted with a laser pulse. The nanoparticle absorbs the light and focuses it like a lens, directing it straight to the star's sharp edge.

This light is then converted into heat that is concentrated at the tip of the star. The generated heat flow breaks the membrane of a cancer cell and destroys it while leaving the healthy cells unharmed. The gold nanoparticles are synthesised in a water solution of vitamin C, which makes them inexpensive and non-toxic. Experts from the Blokhin Russian Cancer Research Center also participated in the development.

Engineers provide a quick way for detecting malaria

A group of researchers from the Institute of Engineering and Management in collaboration with Indian Institute of Engineering Science and Technology, in West Bengal, claim to have developed a mobile, low-cost malaria detection system, which can also diagnose dengue with some modifications. The research team has attached a mobile phone camera on a paper microscope which can be used to take images of blood samples on a slide with some chemicals, and the data can be processed at a central server to detect the presence of malaria.



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E-mail: dgcsir@csir.res.in or dg@csir.res.in

Eurofins takes over Spectro Analytical Lab

A global leader in bioanalytical testing, Eurofins Scientific, recently announced the acquisition of Spectro Analytical Labs, a leading environment, analytical product testing and inspection company in India.

The company has over 22 years of experience in quality testing and inspection-related services, and owns accreditations from the National Accreditation Board for Testing and Calibration Laboratories (NABL) in six fields: Chemical, Mechanical, Biology, Non-destructive Testing, Calibration and Electrical and Electronics.

Starting from a small facility in New Delhi, Spectro has steadily achieved strong growth to become India's leading environment and analytical laboratory with operations and joint ventures all over the country, catering to more than 8,000 customers. The company operates 5 state-of-the-art laboratories in India, with a total surface area of ca. 10,000 sqm, and employs close to 450 staff.

The acquisition of Spectro will enable Eurofins to have a strong environment and analytical testing market entry in India and significantly increase Eurofins' market position in this geographical region. This transaction is another demonstration of Eurofins' commitment to expand its global network of analytical services laboratories across all geographical regions where it anticipates significant growth.

SMT gets a contract for supraflex delivery

Sahajanand Medical Technologies (SMT), through its Italian partner EUKON S.r.l., has signed an agreement with Emilia Romagna region in Italy to deliver approximately 10,000 Supraflex in the next two years.

This agreement was signed after Supraflex DES won against nine other DES after eight months of technical and economical evaluations during the regional tender process concluded few weeks ago. The tender process evaluated the products on basis of quality as well as price offerings from Boston Scientific, Biotronik, Biosensor, Cardinal Health, Envision, Eucatech, Meril and Terumo.

Supraflex, the third gen DES from SMT, has the lowest strut (60µm) thickness among all the available sirolimus eluting coronary stents, without compromising radial strength. It comes with the broadest sizes range currently available for PTCA, a safety proven bio absorbable polymer and an optimized drug release. Established in the year 1998, SMT became the first indigenous player in India to successfully launch coronary stent. SMT is also the first company to get CE approval for DES with Biodegradable Polymers in the world. It is India's largest stent manufacturing company and sells its product in more than 60 countries across the world.

Lumenis introduces first ever M22 OPT Technology

To cater with the solution of Dry Eye Syndrome, Lumenis Ltd, the world's largest energy-based medical device company for surgical, aesthetic and ophthalmic applications recently launched its first ever Lumenis M22 OPT technology with Center for Sight in North India, in New Delhi.

With the launch of Optimum Pulse Technology (OPT) for Dry Eye disease, Lumenis helps address this growing disease with the path breaking technology. Meibomian Gland dysfunction (MGD) is one of the leading causes of Dry Eye disease (DED), affecting millions worldwide. Optimal pulse technology from Lumenis has



emerged as the most effective alternative for patients with MGD. OPT leads to significant improvement in ocular surface quality, gland function and dry eye symptoms.

The Lumenis M22 OPT is an excellent technology for treating eyelid inflammation. OPT is selectively absorbed in the hemoglobin of abnormal blood vessels, and destroys them by thrombosis. A major source of inflammation threatening the eyelids is then removed. It treats the root cause of the problem, provides immediate relief, a safe and comfortable, fast "lunch time" treatment and improves the skin appearance too. Experts say dry eye affects millions of adults. The risk increases with advancing age.

Midmark India develops motorised bed for Indian hospitals

Midmark (India), a leader in the area of patient positioning equipment, has now developed a motorised bed 'Electra', designed to capture a new market in the country's tertiary care sector. The new bed manufactured and designed entirely in India aims to revolutionize the traditional hospital bed. It is designed to enhance patient comfort and caregiver efficiency. Priced in the range of Rs 1,30,000 to Rs 1,50,000 it is advanced but simpler to use at the same time.

Based out of Ohio, Midmark Corporation has been the first in India to develop intensive care bed, emergency and recovery trolleys, two section labour tables, India's first electrically operated hospital bed and has sales and technical support network across India in its category. It was formerly known as Janak Healthcare that



was established in 1951. Electra is in compliance with IEC 60601-2-52, the latest safety international standards for hospital beds.

Its anti-microbial powder coat and an uncluttered access to all its segments make the bed easy to clean for a better infection control. It has an adjustable platform that

can be lowered to a minimum height, ensuring comfort and safety to the patients by providing them with an easy entry and exit to the bed. It can also be increased up to a maximum height making it easy for the caregivers to easily access and deliver healthcare from a secure position.

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Bengaluru Tech Summit 2017

Witnesses' amalgamation of best minds

Bengaluru Tech Summit 2017, hosted by the Department of IT & BT, Government of Karnataka, the three-day (November 16-18, 2017) mega event was a creative mix of two flagship events- the 20th edition of Bengaluru ITE.biz and the 17th edition of Bengaluru India Bio under one platform.

The three-day event was inaugurated on November 16, 2017, by the Chief Minister of Karnataka, Siddaramaiah, in the presence of Anne Berner, Minister for Transport and Communications, Finland, who was the Guest of Honor.

Karnataka Bio-Technology Policy 2017-2022 was released during the second day of the summit. Siddaramaiah pointed out that the new Biotechnology Policy is aimed at fostering development of bio-economy by supporting research and development in emerging technologies such as Bio-Agriculture, Marine Biology, Rare Disease Management, Synthetic Biology, Bioinformatics, Stem Cell and Regenerative Medicine, Anti-microbial Resistance, Bioengineering, Medical Devices and Microbiome.

In addition to this, Priyank Kharge, IT, BT and Tourism Minister for the State mentioned that the new Biotechnology policy 2017-2022 is designed to give an impetus to the growth of the bioeconomy in Karnataka. The new policy lays emphasis on strengthening of the ecosystem required to give a boost to the startups, access to funds for R&D and product development, attractive incentives for investment, and mentorship for further growth of the Biotechnology Sector in Karnataka.

Along with the policy, a document prepared by ABLE (Association of Biotech Led Enterprises) -CMR (CyberMedia Research) titled "Primary Research Based Profiling of Biotech Sector in Karnataka" was also unveiled. The report findings reaffirm the leadership position of Karnataka in biotechnology.

Dr Kiran Mazumdar Shaw, Chairman Vision Group on Biotechnology & CMD, Biocon, addressed the development in the life sciences space and heralded in a new age of digital health using advanced technology, AI and data sciences. She highlighted that the Indian biotech industry commands 5 per cent share of the global biotech industry, comprising of about 800 companies, and is valued at \$ 19 billion growing at 25 per cent.

The summit also had a separate event for women entrepreneurs on the first day, titled "She Drives

BIO-EXCELLENCE AWARDS

- » Agri & Animal Biotech- MULTIPLEX BIOTECH
- » Biopharma & Healthcare- BIOCON
- » Bio-IT, Genomics, System Biology- STRAND LIFE SCIENCES
- » Bioindustrial- NOVOZYMES SOUTH ASIA
- » Bioservices- SYNGENE INTERNATIONAL

EMERGING COMPANY AWARDS

- » Agri & Animal Biotech- SEA6ENERGY
- » Biopharma & Healthcare- CARDIOTRACK
- » Bioindustrial- STRING BIO
- » Bio-IT, Genomics, System Biology- VIBRANT HEALTH SCIENCES
- » Bioservices- AFFIGENIX BIOSOLUTIONS

LIFETIME ACHIEVEMENT AWARDS

- » Prof H Sharat Chandra, Director, Centre for Human Genetics; Emeritus Professor, Indian Institute of Science and Honorary Professor at the JNCASR; Chairman, IBAB Governing Body
- » Prof Narayanrao Yathindra, Professor and Director, Institute of Bioinformatics & Applied Biotechnology (IBAB)
- » Prof Govindarajan Padmanaban, Former Director, Indian Institute of Sciences (IISc)

Technology" that highlighted women and their achievements in leading innovation in the IT and BT sectors. Following that on the second day, a biotech conclave was also organized which saw the participation of successful women leaders from the healthcare field.

Over the spread of three days, a number of interesting biotech sessions were conducted addressing issues such as regulatory policies, rare diseases, world of microbiomes, integrative medicine, infectious diseases & vaccines, biomanufacturing, biotech & pharma partnership, to name a few.

During the summit, Government of Karnataka gave out Bio-Excellence awards with the purpose of recognizing those biotechnology firms that have shown dynamic leadership and outstanding contribution in their chosen fields of biotechnology activities. Apart from the Bio-Excellence and Emerging Company awards, a set of Lifetime Achievement Awards were also given out during the session, to honour the outstanding contributions of eminent scientists in the field of Biotechnology.

On the concluding day, the summit saw students from across Karnataka competing in India's largest Biotech quiz 'Bio Quiz 2017'. Students from Sri Jayachamarajendra College of Engineering, Mysuru, emerged as the winners and took home Rs 75,000.



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